



I-69 EVANSVILLE TO INDIANAPOLIS TIER 2 STUDIES

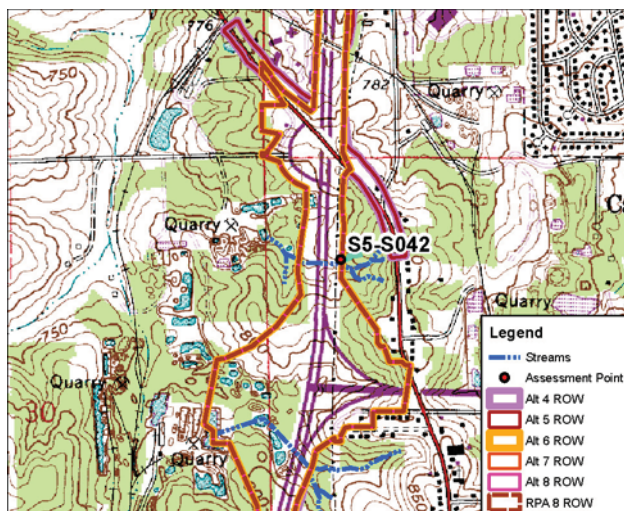
Section 5—Final Environmental Impact Statement

APPENDIX M DRAFT STREAM ASSESSMENT REPORT

TECHNICAL REPORT APPENDICES

APPENDIX A	Stream Impacts and Stream Relocation Lengths by Alternative
APPENDIX B	Stream Site Reports and Data Sheets

Stream Impacts S5-S042



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 17
Legal Drain (Y/N): N
UTME: 1766774 ft

USGS Quadrangle: Bloomington
Section: 29
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 1.2 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.02 sq mi
Predominant Sub: Sand/silt

Stream S5-S042 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	77	0.01	0.00
5	79	0.01	0.00
6	79	0.01	0.00
7	79	0.01	0.00
8	79	0.01	0.00
RPA 8	79	0.01	0.00

Description of Potential Impact:

Impacts to S5-S042 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately silt and leaf pack. There is a wide riparian buffer associated with this stream. The floodplain consists of immature forests on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S042 are on the second page of this form.

Stream Impacts S5-S042



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S042

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200

LAT. 39.19074

LONG.

RIVER CODE

RIVER MILE

DATE 10/12/11

SCORER DEW/KSS

COMMENTS (Long: -86.55402) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	16%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	14%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	70%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 3.0'/1.25' AVERAGE BANKFULL WIDTH (meters): 0.91

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/12/11** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **20%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

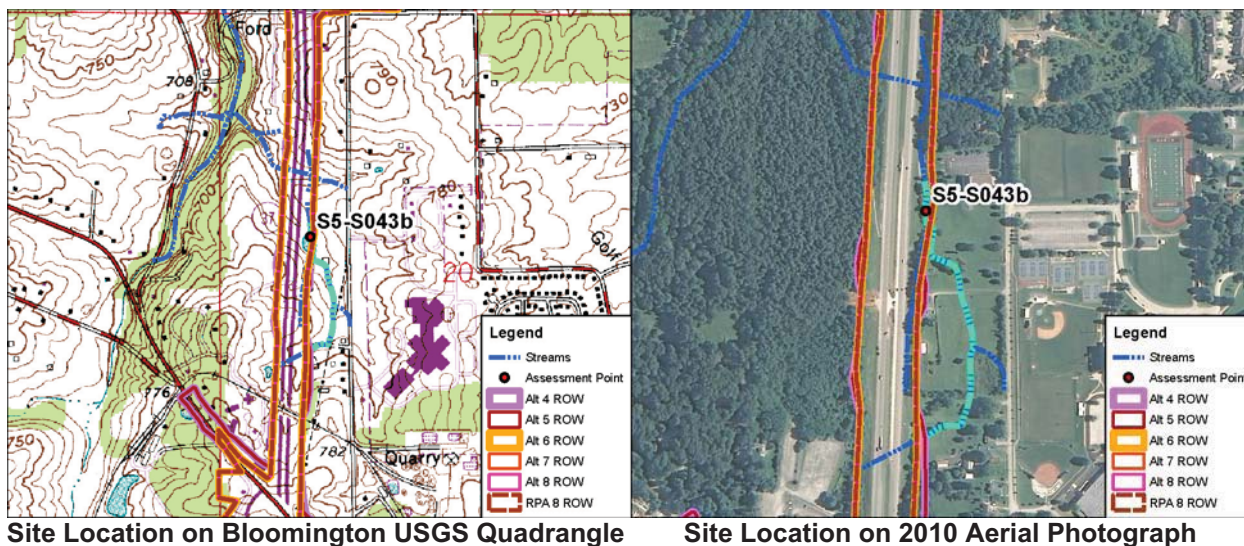
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S042 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Stout Creek	Section:	20
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	3.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	1.0 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	51	Watershed Area:	0.27 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Sand/boulder
UTME: 1766909 ft	UTMN: 14236431 ft		

Stream S5-S043b – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	318	0.02	0.00
5	322	0.02	0.00
6	279	0.02	0.00
7	279	0.02	0.00
8	279	0.02	0.00
RPA 8	279	0.02	0.00

Description of Potential Impact:

Impacts to S5-S043b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately sand and boulders. There is a narrow riparian corridor in most places on both banks of the stream. The floodplain consists of a mixture of INDOT ROW and a maintained institution yard where the Alternatives cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b are on the second page of this form.

Stream Impacts S5-S043b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

51

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S043b

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.27

LENGTH OF STREAM REACH (ft) 200

LAT. 39.20186

LONG.

RIVER CODE

RIVER MILE

DATE 10/12/11

SCORER DEW/KSS

COMMENTS (Long: -86.55348) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts]	34%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	20%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	36%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **54.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 22

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

26

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

20

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 46

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW = 3.0'/1.0'

AVERAGE BANKFULL WIDTH (meters): 1.00

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS Adjacent to row, vegetated channel

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
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ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **95%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

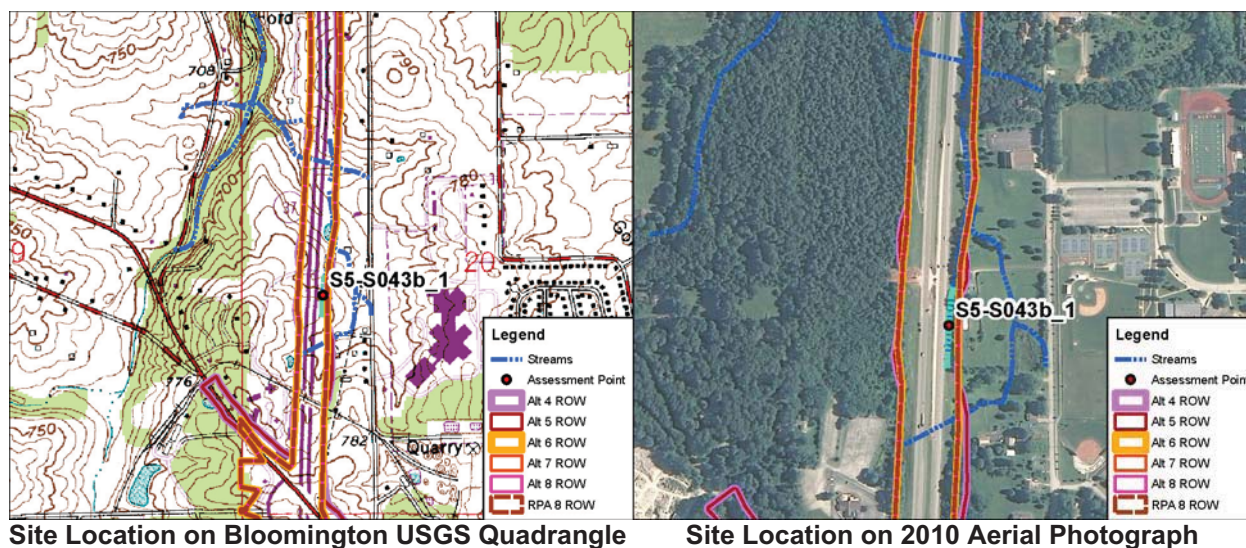
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S043b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b_1



Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766813 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.0 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043b_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	429	0.01	0.02
5	429	0.01	0.02
6	429	0.01	0.02
7	429	0.01	0.02
8	429	0.01	0.02
RPA 8	429	0.01	0.02

Description of Potential Impact:

Impacts to S5-S043b_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b_1 are on the second page of this form.

Stream Impacts S5-S043b_1



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043b_1** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.19989** LONG. RIVER CODE RIVER MILE

DATE **10/12/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.55383) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 1'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.30**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/12/11** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

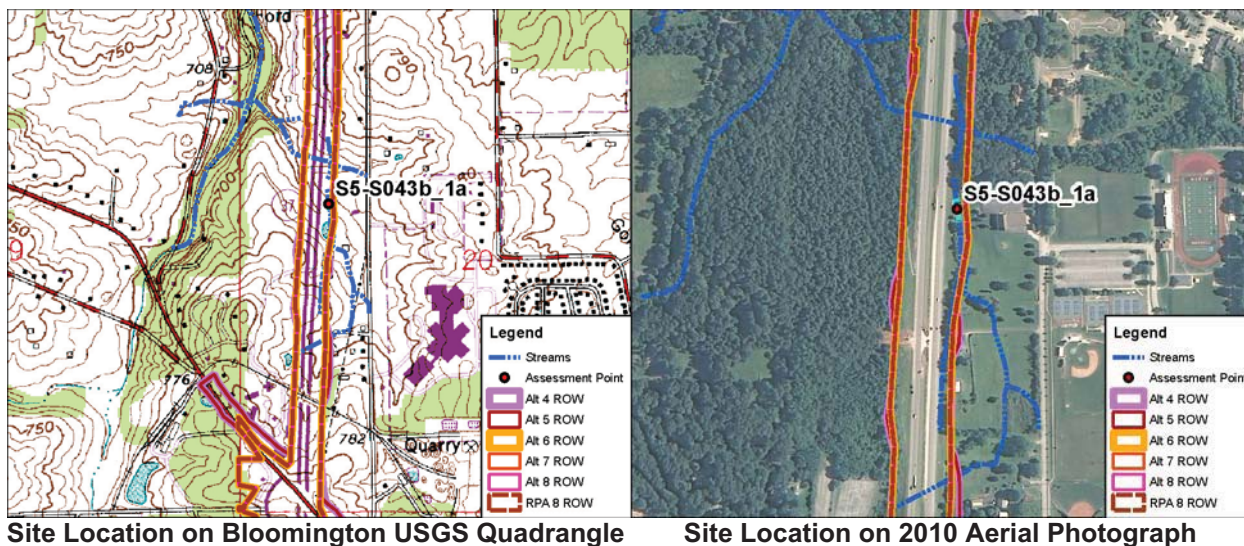
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043b_1 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b_1a



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Dump Rock Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766895 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 0.1 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043b_1a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	109	0.01	0.00
5	109	0.01	0.00
6	109	0.01	0.00
7	109	0.01	0.00
8	109	0.01	0.00
RPA 8	109	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043b_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a dump rock gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b_1a are on the second page of this form.

Stream Impacts S5-S043b_1a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S043b_1a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 109

LAT. 39.20060

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.55371) (Dump Rock Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☐ RECOVERING☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 3'/0.1' AVERAGE BANKFULL WIDTH (meters): 0.91

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **02/18/13** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

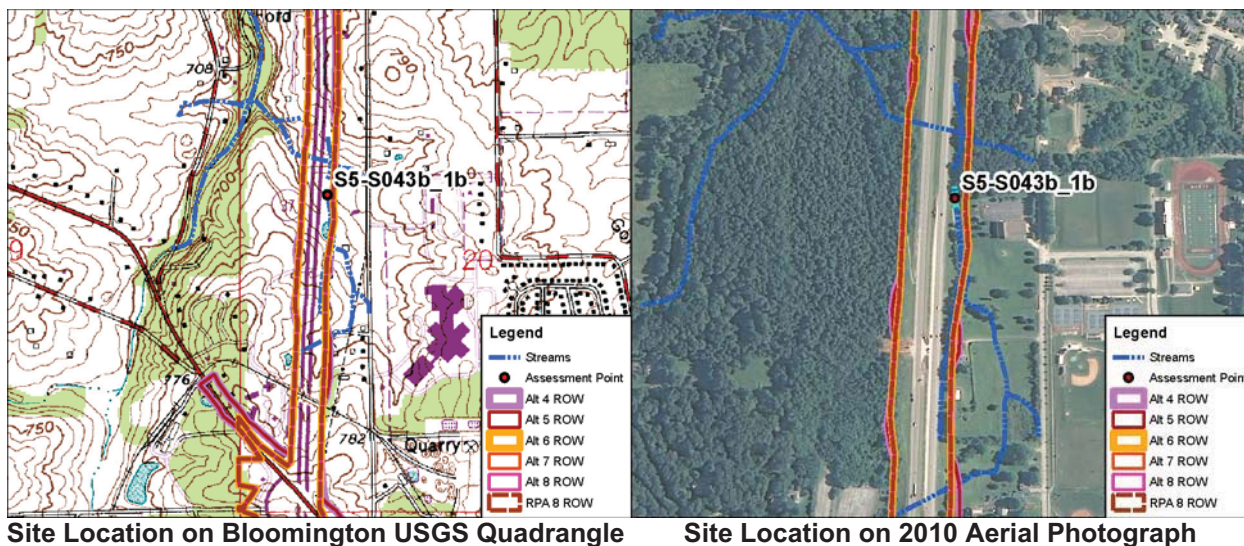
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S043b_1a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b_1b



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766883 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.0 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043b_1b – Modified Class I PWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	109	0.01	0.00
5	109	0.01	0.00
6	109	0.01	0.00
7	109	0.01	0.00
8	109	0.01	0.00
RPA 8	109	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043b_1b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b_1b are on the second page of this form.

Stream Impacts S5-S043b_1b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S043b_1b

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 109

LAT. 39.20273

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.55356) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☐ RECOVERING☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **02/18/13** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

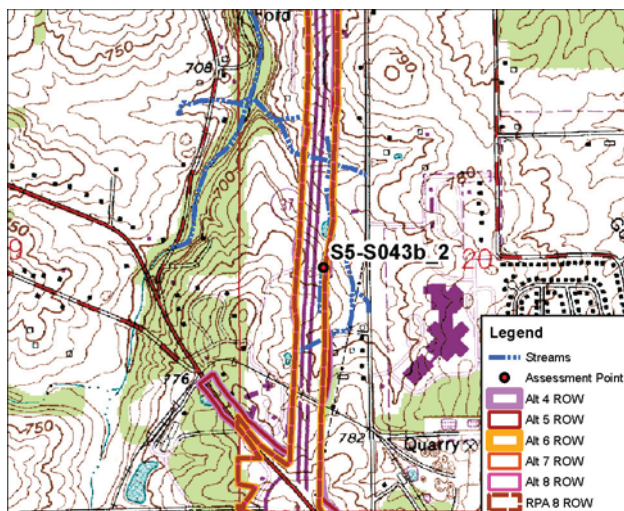
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043b_1b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b_2



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Dump Rock Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766846 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043b_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	114	0.01	0.00
5	114	0.01	0.00
6	114	0.01	0.00
7	114	0.01	0.00
8	114	0.01	0.00
RPA 8	114	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043b_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a dump rock gutter located within existing INDOT ROW. There is no riparian buffer associated with this artificial channel's left bank and a narrow shrub buffer along the right bank. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b_2 are on the second page of this form.

Stream Impacts S5-S043b_2



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043b_2**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **115**

LAT. **39.20060**

LONG.

RIVER CODE

RIVER MILE

DATE **10/12/11**

SCORER **DEW/KSS**

COMMENTS **(Long: -86.55371) (Dump Rock Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 3'/0.1'** AVERAGE BANKFULL WIDTH (meters): **0.91**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/12/11** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

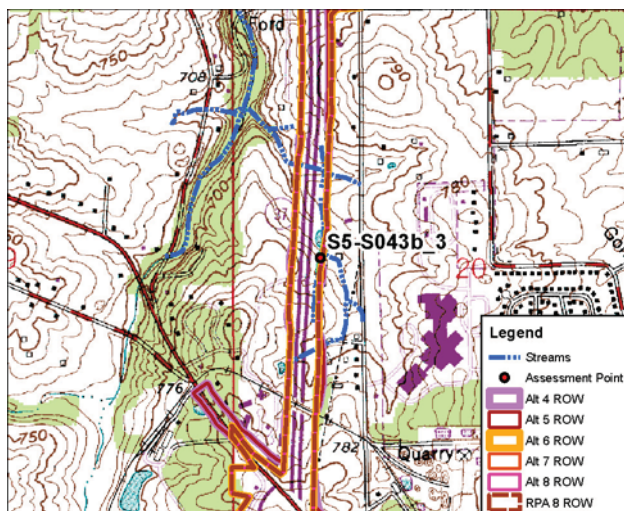
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

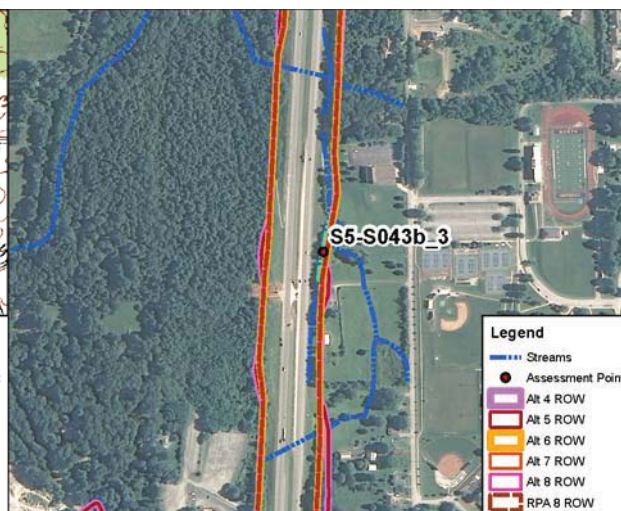
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043b_2 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043b_3



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766878 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 0.9 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043b_3 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	334	0.01	0.00
5	334	0.01	0.00
6	334	0.01	0.00
7	334	0.01	0.00
8	334	0.01	0.00
RPA 8	334	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043b_3 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter. There is narrow riparian buffer associated with this artificial channel. The adjacent floodplain is dominated by INDOT ROW on the left and new field on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043b_3 are on the second page of this form.



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**SITE NUMBER **S5-S043b_3**RIVER BASIN **White River**DRAINAGE AREA (mi²) **0.01**LENGTH OF STREAM REACH (ft) **200**LAT. **39.20112**LONG. RIVER CODE RIVER MILE DATE **10/12/11**SCORER **DEW/KSS**COMMENTS **(Long: -86.55359) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☐ RECOVERING☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 0.9'/0.2'**AVERAGE BANKFULL WIDTH (meters): **0.27**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/12/11** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

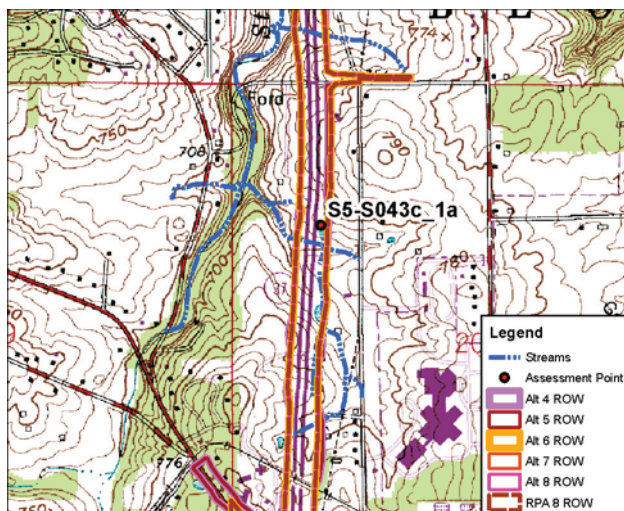
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S043b_3 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043c_1a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766888 ft **UTMN:** 14237282 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.0 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043c_1a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	151	0.01	0.15
5	151	0.01	0.16
6	151	0.01	0.11
7	151	0.01	0.11
8	151	0.01	0.11
RPA 8	151	0.01	0.11

Description of Potential Impact:

Impacts to S5-S043c_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043c_1a are on the second page of this form.

Stream Impacts S5-S043c_1a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043c_1a**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **150**

LAT. **39.20420**

LONG.

RIVER CODE

RIVER MILE

DATE **05/30/12**

SCORER **JDP**

COMMENTS **(Long: -86.55354) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 1'/0.2'**

AVERAGE BANKFULL WIDTH (meters): **0.30**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/29/12** Quantity: **0.14**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

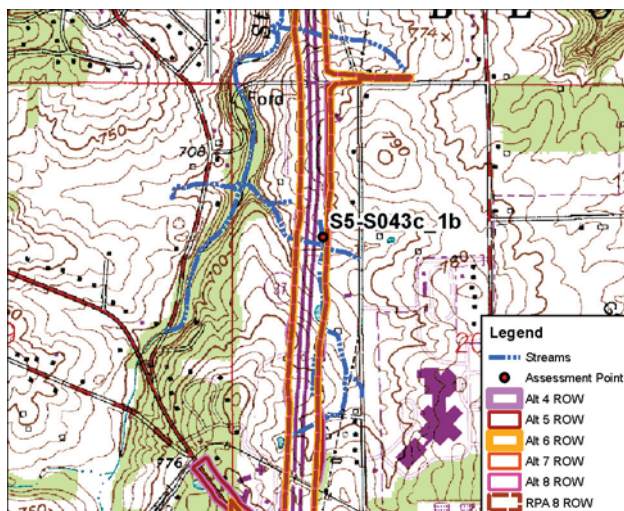
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043c_1a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043c_1b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Dump Rock Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766913 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 0.1 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043c_1b – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	62	0.01	0.00
5	62	0.01	0.00
6	62	0.01	0.00
7	62	0.01	0.00
8	62	0.01	0.00
RPA 8	62	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043c_1b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a dump rock gutter. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043c_1b are on the second page of this form.

Stream Impacts S5-S043c_1b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043c_1b**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **62**

LAT. **39.20387**

LONG.

RIVER CODE

RIVER MILE

DATE **05/30/12**

SCORER **JDP**

COMMENTS **(Long: -86.55345) (Dump Rock Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

Pool Depth Max = 30

0

Bankfull Width Max=30

5

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 3'/0.1'**

AVERAGE BANKFULL WIDTH (meters): **1.00**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/29/12** Quantity: **0.14**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

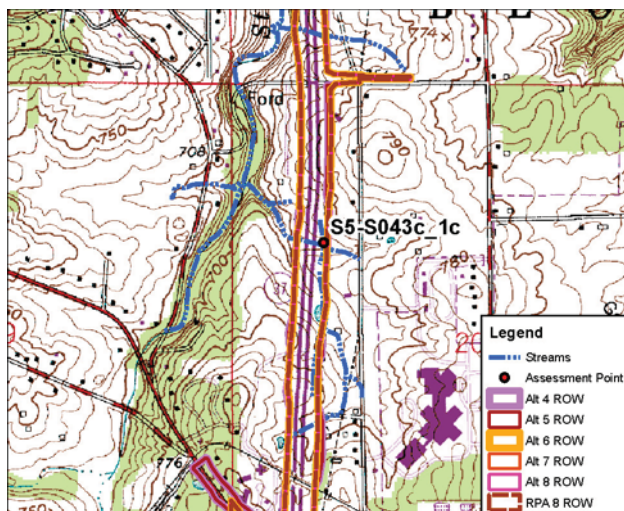
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043c_1b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043c_1c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

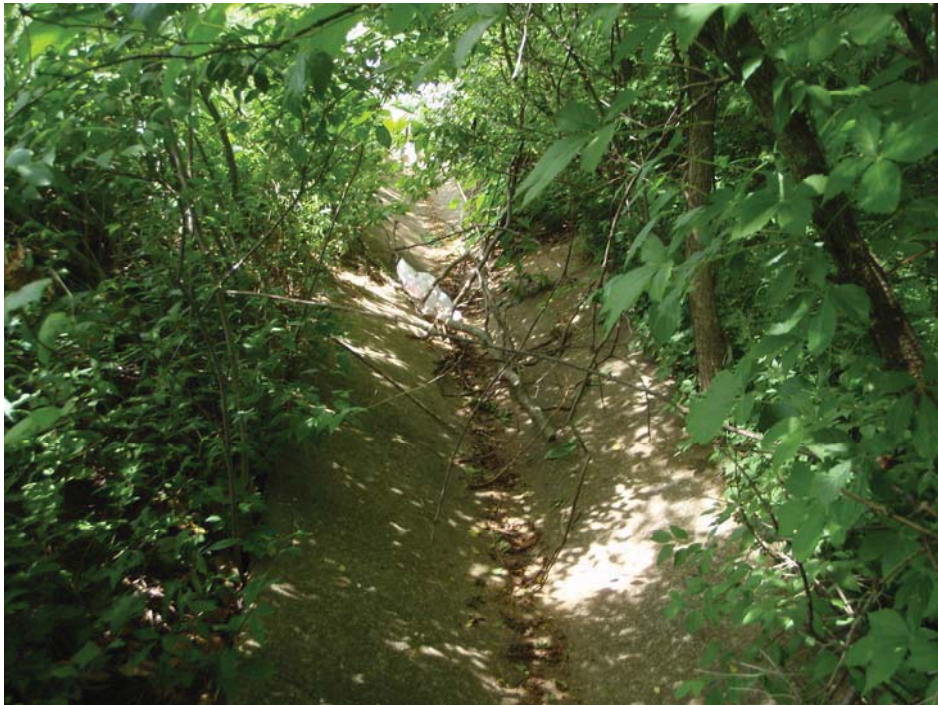
Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766919 ft
UTMN: 14237102 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 0.9 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043c_1c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	49	0.01	0.00
5	49	0.01	0.00
6	49	0.01	0.00
7	49	0.01	0.00
8	49	0.01	0.00
RPA 8	49	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043c_1c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter. There is no riparian buffer associated with this artificial channel. The floodplain consists of maintained INDOT ROW. Photographs taken downstream in the area where these Alternatives cross S5-S043c_1c are on the second page of this form.



Photograph Taken Downstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043c_1c**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **50**

LAT. **39.20371**

LONG.

RIVER CODE

RIVER MILE

DATE **05/30/12**

SCORER **JDP**

COMMENTS **(Long: -86.55343) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**

TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 0.9'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.27**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/29/12** Quantity: **0.14**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

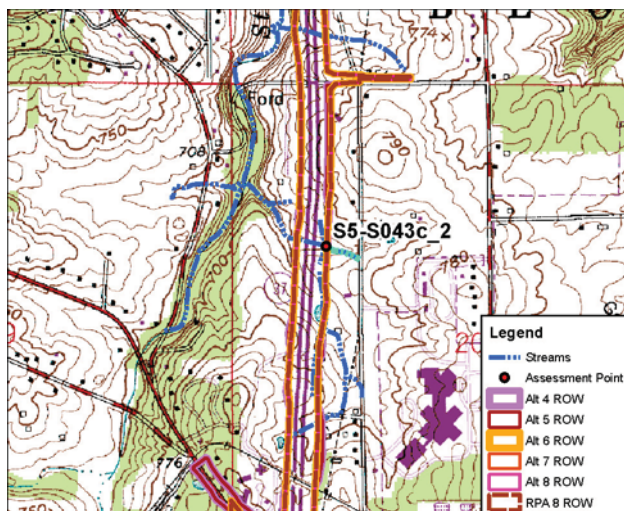
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043c_1c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043c_2



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 18
Legal Drain (Y/N): N
UTME: 1766946 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 0.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Sand/Silt

Stream S5-S043c_2 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	44	0.01	0.00
5	47	0.01	0.00
6	43	0.01	0.00
7	43	0.01	0.00
8	43	0.01	0.00
RPA 8	43	0.01	0.00

Description of Potential Impact:

Impacts to S5-S043c_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately sand and silt. There is a narrow riparian corridor in most places on both banks of the stream. The floodplain consists of immature forest and shrubs. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043c_2 are on the second page of this form.



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

18

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S043c_2** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **405** LAT. **39.20345** LONG. RIVER CODE RIVER MILE

DATE **02/19/13** SCORER **DEW** COMMENTS **(Long: -86.55277) (Natural- Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="15%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="70%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

Pool Depth Max = 30

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW 3'/0.5'**AVERAGE BANKFULL WIDTH (meters): **0.90**

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **02/18/13** Quantity: **0.14**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

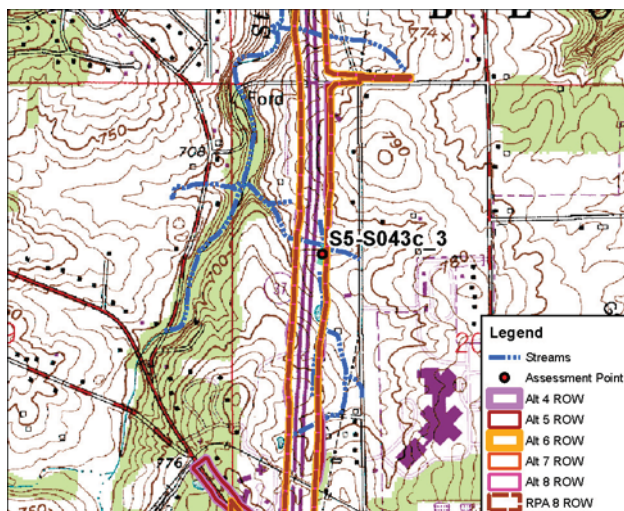
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043c_2 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S043c_3



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 12
Legal Drain (Y/N): N
UTME: 1766907 ft
UTMN: 14236983 ft

USGS Quadrangle: Bloomington
Section: 20
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.0 feet
OHWM Depth: 0.2 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S043c_3 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	204	0.01	0.15
5	204	0.01	0.16
6	204	0.01	0.14
7	204	0.01	0.14
8	204	0.01	0.14
RPA 8	204	0.01	0.14

Description of Potential Impact:

Impacts to S5-S043c_3 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. This segment of stream is captured by a concrete gutter. The predominant substrate is artificial. There is no riparian buffer along the left bank and a narrow riparian zone on the right bank of this ditch. The floodplain consists of the urban roadway on the left bank and immature forest on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S043c_3 are on the second page of this form.

Stream Impacts S5-S043c_3



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S043c_3

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 204

LAT. 39.20337

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.55347) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1'/0.2'

AVERAGE BANKFULL WIDTH (meters): 0.30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Stout Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **02/18/13** Quantity: **0.02**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

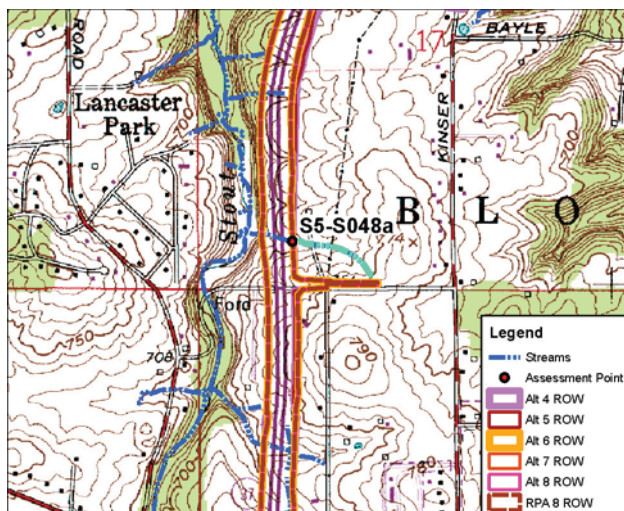
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S043c_3 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S048a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Stout Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 18
Legal Drain (Y/N): N
UTME: 1766936 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 1.3 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Sand/silt

Stream S5-S048a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	14	0.01	0.00
5	16	0.01	0.00
6	16	0.01	0.00
7	16	0.01	0.00
8	16	0.01	0.00
RPA 8	16	0.01	0.00

Description of Potential Impact:

Impacts to S5-S048a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of sand, silt and boulders. There is a wide riparian corridor consisting of immature trees on the left bank and no woody vegetation on the right bank consisting of an old herbaceous field. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S048a are on the second page of this form.

Stream Impacts S5-S048a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

18

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S048a**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.04**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.20962**

LONG.

RIVER CODE

RIVER MILE

DATE **10/12/11**

SCORER **DEW/KSS**

COMMENTS **(Long: -86.55333) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL

☒ RECOVERED

☐ RECOVERING

☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="15%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="70%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **10.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**

TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 3'/1.3'**

AVERAGE BANKFULL WIDTH (meters): **0.90**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

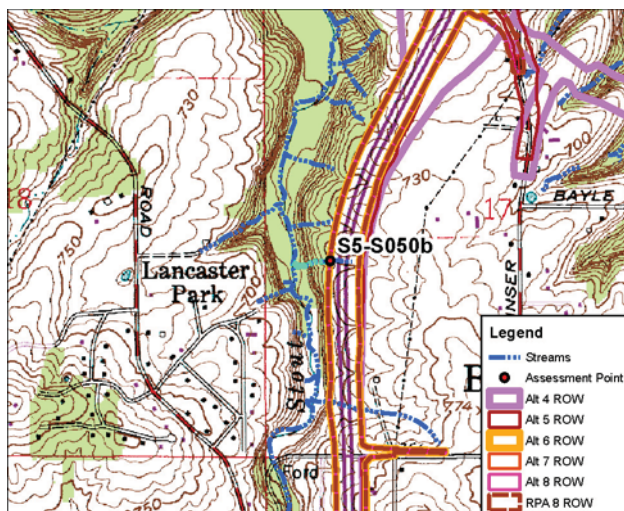
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

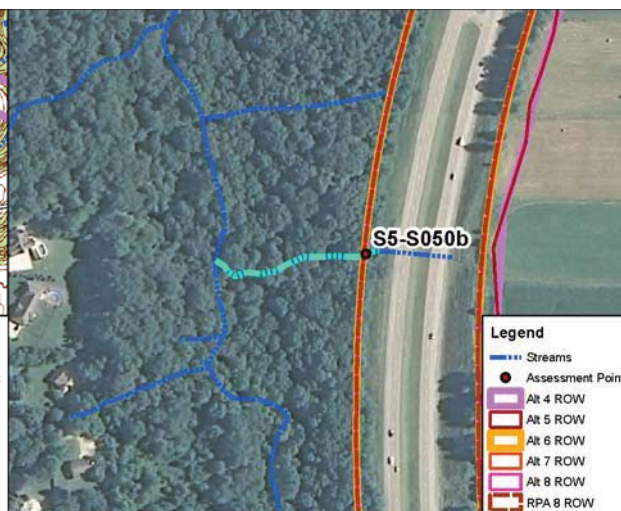
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S048a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S050b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Stout Creek	Section:	17
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	9.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	1.2 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	48	Watershed Area:	0.02 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Boulder Slabs
UTME: 1766627 ft	UTMN: 14240794 ft		

Stream S5-S050b –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	42	0.01	0.05
5	42	0.01	0.05
6	42	0.01	0.05
7	42	0.01	0.05
8	42	0.01	0.05
RPA 8	42	0.01	0.05

Description of Potential Impact:

Impacts to S5-S050b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of boulder slabs. There is a wide forested buffer associated with both stream banks where the Alternatives cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S050b are on the second page of this form.

Stream Impacts S5-S050b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

48

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S050b

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200 LAT. 39.21385 LONG. RIVER CODE RIVER MILE

DATE 10/12/11 SCORER DEW/KSS COMMENTS (Long: -86.55440) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input checked="" type="checkbox"/> BLDR SLABS [16 pts]	80%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	9%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	11%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 89.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 25

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI
Metric
PointsSubstrate
Max = 40

28

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull
Width
Max=30

20

COMMENTS OHW = 9'/1.2' AVERAGE BANKFULL WIDTH (meters): 2.75

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Stout Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **10%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

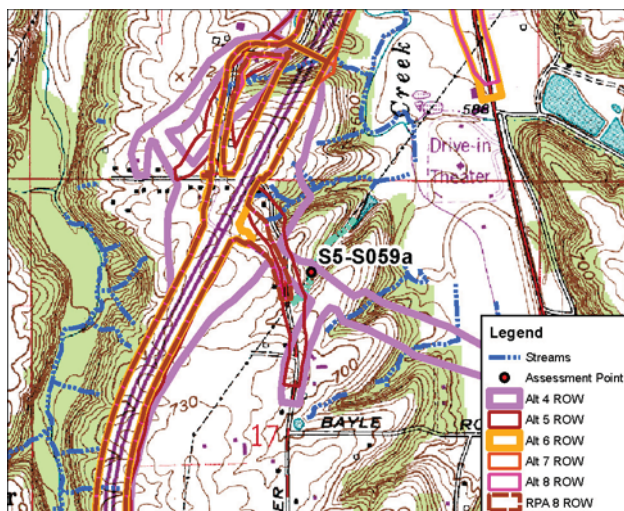
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S050b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S059a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 42
Legal Drain (Y/N): N
UTME: 1768849 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 6.0 feet
OHWM Depth: 1.2 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Sand/cobble

Stream S5-S059a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	330	0.05	0.77
5	174	0.02	0.41
6	0	0.00	0.00
7	0	0.00	0.01
8	0	0.00	0.01
RPA 8	0	0.00	0.01

Description of Potential Impact:

Impacts to S5-S059a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of sand, cobble, and silt. There is a wide immature forested buffer associated with both stream banks where the Alternatives 4 and 5 cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S059a are on the second page of this form.

Stream Impacts S5-S059a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

42

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S059a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 39.21997 LONG. RIVER CODE RIVER MILE

DATE 10/12/11 SCORER DEW/KSS COMMENTS (Long: -86.54651) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	10%	<input type="checkbox"/> SILT [3 pt]	15%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	25%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	50%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 35.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 18

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

22

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 6'/1.2' AVERAGE BANKFULL WIDTH (meters): 1.82

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **0%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

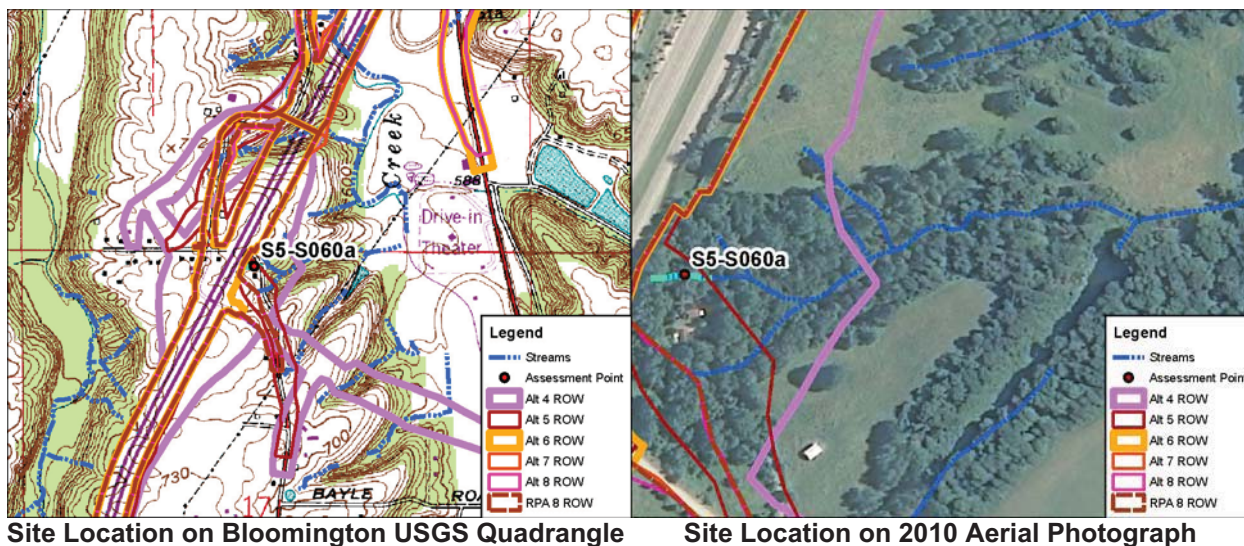
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S059a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S060a



Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 34
Legal Drain (Y/N): N
UTME: 1768343 ft **UTMN:** 14243839 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.2 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Bedrock

Stream S5-S060a –Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	165	0.01	0.07
5	147	0.01	0.07
6	0	0.00	0.01
7	0	0.00	0.01
8	0	0.00	0.01
RPA 8	0	0.00	0.01

Description of Potential Impact:

Impacts to S5-S060a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of bedrock. There is a wide riparian corridor on the left bank and a narrow riparian zone on the right bank where the Alternatives cross this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S060a are on the second page of this form.

Stream Impacts S5-S060a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

34

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S060a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 165

LAT. 39.22219

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54828) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	1%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	90%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	2%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 92.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 19

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI
Metric
PointsSubstrate
Max = 40

24

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 1

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull
Width
Max=30

5

COMMENTS OHW - 2.2' / 1.0'

AVERAGE BANKFULL WIDTH (meters): 0.70

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **40%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

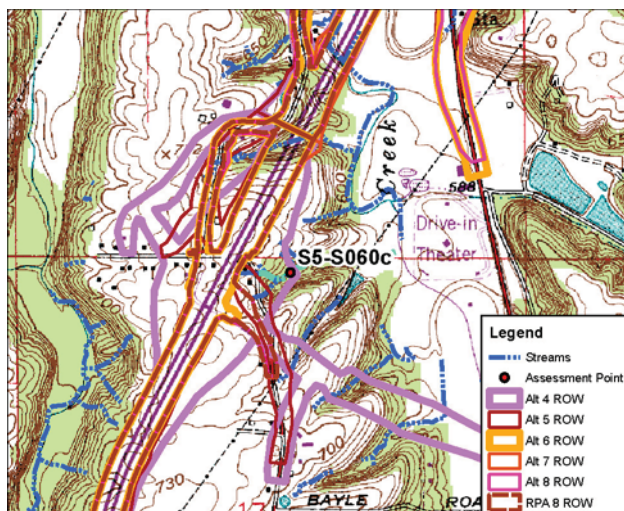
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

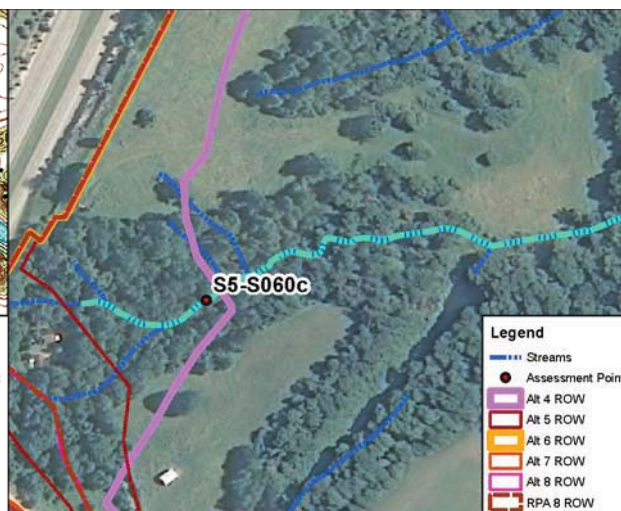
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S060a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S060c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 34
Legal Drain (Y/N): N
UTME: 1768775 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.2 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Bedrock

Stream S5-S060c –Class I PWHH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	404	0.02	1.75
5	0	0.00	0.01
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S060c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of bedrock. There is a wide riparian corridor where Alternative 4 crosses this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S060c are on the second page of this form.

Stream Impacts S5-S060c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

34

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S060c

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22218

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54676) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	1%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	90%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	2%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 92.00%

(A)

Substrate Percentage
Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 19

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI
Metric
PointsSubstrate
Max = 40

24

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

1

Pool Depth
Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.2' / 1.0'

AVERAGE BANKFULL WIDTH (meters):

0.70

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☐ N Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **40%**

Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

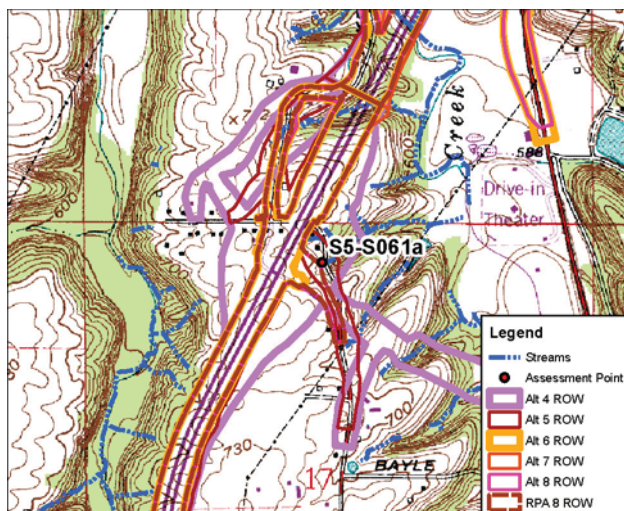
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

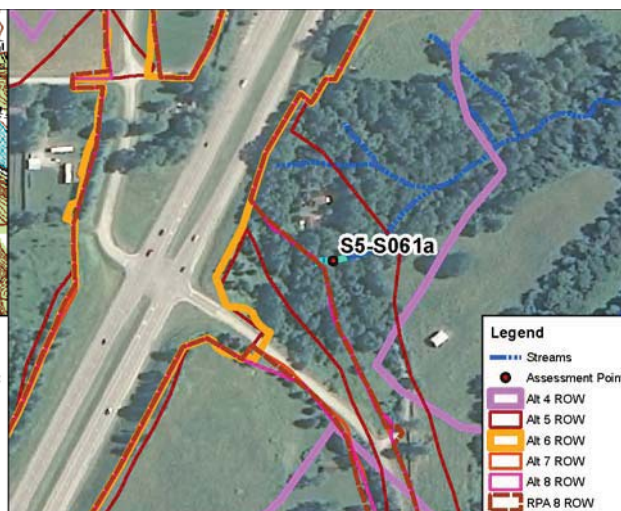
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S060c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S061a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 51
Legal Drain (Y/N): N
UTME: 1768401 ft
UTMN: 14243581 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 8.0 feet
OHWM Depth: 1.1 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.02 sq mi
Predominant Sub: Boulder slabs/cobble

Stream S5-S061a – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	87	0.02	0.59
5	87	0.02	0.59
6	0	0.00	0.00
7	13	0.01	0.34
8	12	0.01	0.34
RPA 8	11	0.01	0.34

Description of Potential Impact:

Impacts to S5-S061a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of boulder slabs and cobble. There is a wide riparian corridor where the Alternatives cross this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S061a are on the second page of this form.

Stream Impacts S5-S061a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

51**HHEI Score (sum of metrics 1, 2, 3) :**SITE NAME/LOCATION **I-69 Section 5**SITE NUMBER **S5-S061a**RIVER BASIN **White River**DRAINAGE AREA (mi²) **0.02**LENGTH OF STREAM REACH (ft) **85**LAT. **39.22148**LONG. RIVER CODE RIVER MILE DATE **10/12/11**SCORER **DEW/KSS**COMMENTS **(Long: -86.54808) (Natural-Class II)****NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions****STREAM CHANNEL MODIFICATIONS:**☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input checked="" type="checkbox"/> BLDR SLABS [16 pts]	70%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	20%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **90.00%****(A)**Substrate Percentage Check **100%****(B)**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **28**TOTAL NUMBER OF SUBSTRATE TYPES: **3****HHEI Metric Points**

Substrate Max = 40

31**A + B**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20COMMENTS **OHW = 8'/1.1'** AVERAGE BANKFULL WIDTH (meters): **2.44****This information must also be completed****RIPARIAN ZONE AND FLOODPLAIN QUALITY**

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH**FLOODPLAIN QUALITY**

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS **FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **10%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

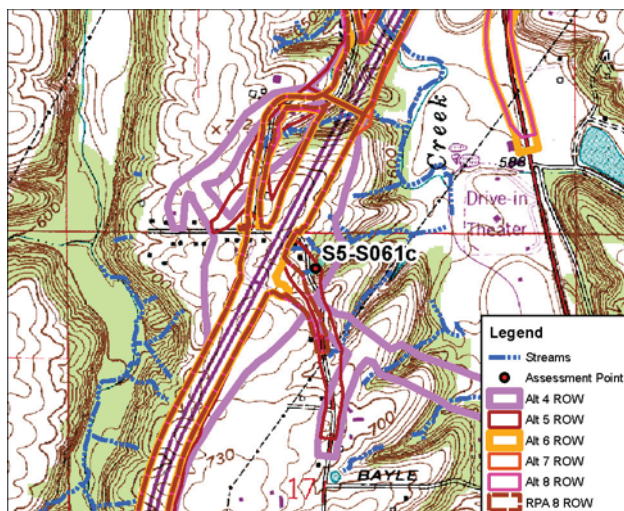
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S061a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S061c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 30
Legal Drain (Y/N): N
UTME: 1768511 ft **UTMN:** 14243619 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.9 feet
OHWM Depth: 1.1 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.02 sq mi
Predominant Sub: Bedrock

Stream S5-S061c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	273	0.02	0.46
5	102	0.01	0.28
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S061c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of bedrock. There is a wide riparian corridor where Alternatives 4 and 5 cross this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S061c are on the second page of this form.

Stream Impacts S5-S061c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

30

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S061c

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22158

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54770) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	1%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	1%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	90%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	2%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	1%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 93.00%

(A)

Substrate Percentage
Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 19

TOTAL NUMBER OF SUBSTRATE TYPES: 6

HHEI
Metric
PointsSubstrate
Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull
Width
Max=30

5

COMMENTS OHW - 2.9' / 1.1' AVERAGE BANKFULL WIDTH (meters): 0.88

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order **1**

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information: **115 Upstream / 119 Downstream / 117 Right bank / 118 Left bank**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **40%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

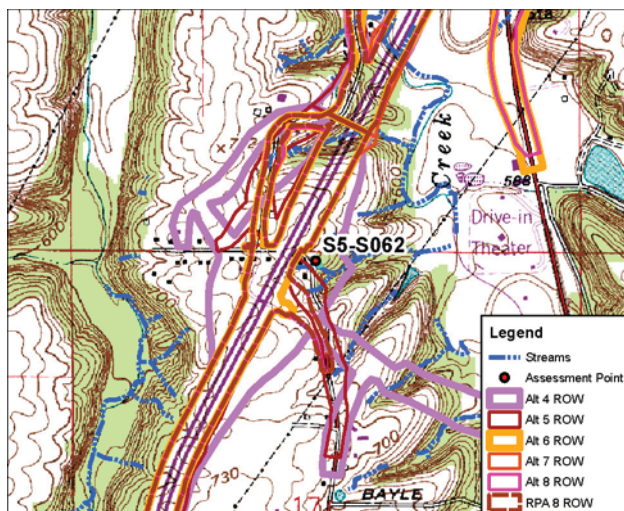
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S061c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S062



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 43
Legal Drain (Y/N): N
UTME: 1768463 ft **UTMN:** 14243895 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.0 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Cobble

Stream S5-S062 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	140	0.01	0.30
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S062 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of cobble. There is a wide riparian buffer associated with this stream. The floodplain consists of mature forest on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S062 are on the second page of this form.

Stream Impacts S5-S062



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

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HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S062

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 140

LAT. 39.22234

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54786) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	2%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	10%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	80%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	3%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 90.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 28

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

33

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 1

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.0' / 1.0'

AVERAGE BANKFULL WIDTH (meters): 0.60

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **30%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

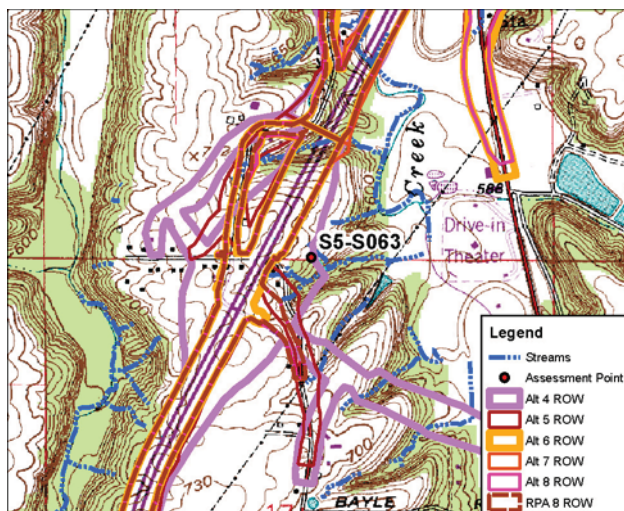
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S062 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S063



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 43
Legal Drain (Y/N): N
UTME: 1768703 ft **UTMN:** 14244015 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.9 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Bedrock

Stream S5-S063 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	82	0.01	0.29
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S063 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of bedrock. There is a moderately-wide riparian buffer where Alternative 4 crosses this stream. The floodplain consists of mature forest on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S063 are on the second page of this form.

Stream Impacts S5-S063



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

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HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S063

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.22267 LONG. RIVER CODE RIVER MILE

DATE 05/12/06 SCORER A Rogers COMMENTS (Long: -86.54701) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	1%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	2%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	90%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 95.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 28

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

33

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 1

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.9' / 1.0' AVERAGE BANKFULL WIDTH (meters): 0.60

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☐ N Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **25%**

Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

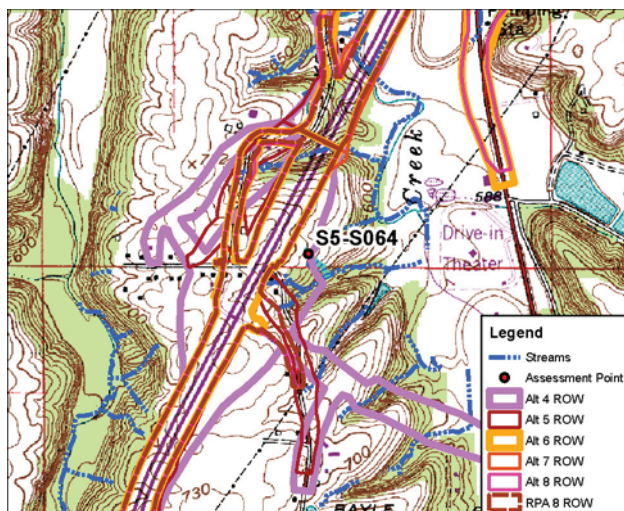
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S063 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S064



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 38
Legal Drain (Y/N): N
UTME: 1768691 ft **UTMN:** 14244134 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.9 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Bedrock

Stream S5-S064 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	102	0.01	0.19
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S064 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately bedrock. There is a wide riparian buffer associated with this stream. The floodplain consists of mature forests on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S064 are on the second page of this form.

Stream Impacts S5-S064



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

38

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S064** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.22300** LONG. RIVER CODE RIVER MILE

DATE **05/12/06** SCORER **A Rogers** COMMENTS **(Long: -86.54705) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="1%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="2%"/>
<input checked="" type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="90%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="2%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **95.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **28** TOTAL NUMBER OF SUBSTRATE TYPES: **5**HHEI
Metric
PointsSubstrate
Max = 40

33

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull
Width
Max=30

5

COMMENTS **OHW - 1.9' / 1.0'** AVERAGE BANKFULL WIDTH (meters): **0.70**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **25%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

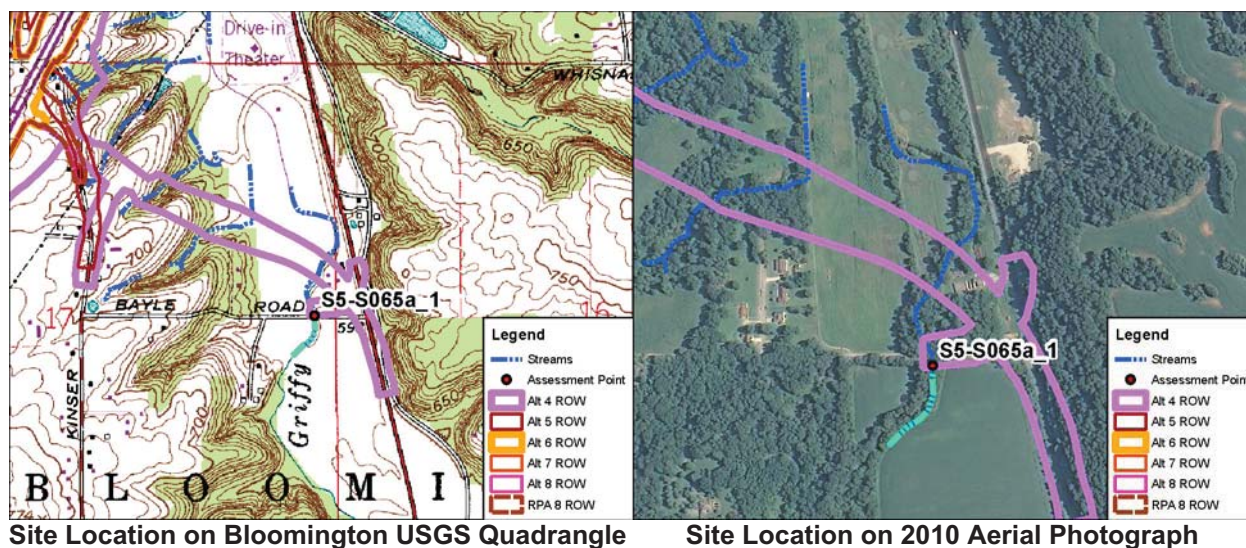
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S064 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S065a_1



Aquatic Resource: Stream
Stream Name: Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 61.5
Legal Drain (Y/N): N
UTME: 1761019 ft **UTMN:** 14241418 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 4.4 feet
OHWM Depth: 6.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 12.49 sq mi
Predominant Sub: Gravel/sand

Stream S5-S065a_1 – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	32	0.03	0.03
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S065a_1 at this location for the Alternatives are listed in the table above. Segments S5-S065a_1 and S5-S065a_3 were evaluated together. Segment S5-S065a_1 is upstream of the Bayles Road culverts and S5-S065a_3 is downstream of the road crossing. At the time of evaluation, this stream is a perennial stream with good habitat development and moderate sinuosity. The predominant substrate consists of gravel and sand. The stream has a wide riparian corridor associated with both banks. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5-S065a_3 segment are on the second page of this form. Implementation of the RPA 8 will decrease the amount of impacts at this location.

Stream Impacts S5-S065a_1



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
565a-1, -2, 3		Griffy Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/23/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 61.5

1] **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	55	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	25	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NUMBER OF BEST TYPES: ☒ 4 or more [2] ☒ 3 or less [0]

Substrate Maximum 20

Comments

2] **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount		% Amount		% Amount	
20	UNDERCUT BANKS [1]		POOLS > 70cm [2]		OXBOWS, BACKWATERS [1]
20	OVERHANGING VEGETATION [1]		ROOTWADS [1]		AQUATIC MACROPHYTES [1]
35	SHALLOWS (IN SLOW WATER) [1]		BOULDERS [1]	10	LOGS OR WOODY DEBRIS [1]
	ROOTMATS [1]				

Cover Maximum 20

Comments

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel Maximum 20

Comments

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10

Comments

5] **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input checked="" type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input checked="" type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> SLOW [1]	
		<input type="checkbox"/> INTERMITTENT [-1]	
		<input type="checkbox"/> EDDIES [1]	

Indicate for reach - pools and riffles.

Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Riffle/Run Maximum 8

Comments

6] GRADIENT (8 ft/mi)	% POOL	% GLIDE	Gradient Maximum
<input checked="" type="checkbox"/> MODERATE [6 - 10]	15		10
<input type="checkbox"/> VERY LOW - LOW [2 - 4]			
<input type="checkbox"/> HIGH - VERY HIGH [10 - 6]			

OHW = 44' x 6.5' (13.4m)

S65a-1, -2, -3

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Griff Creek	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score 61.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

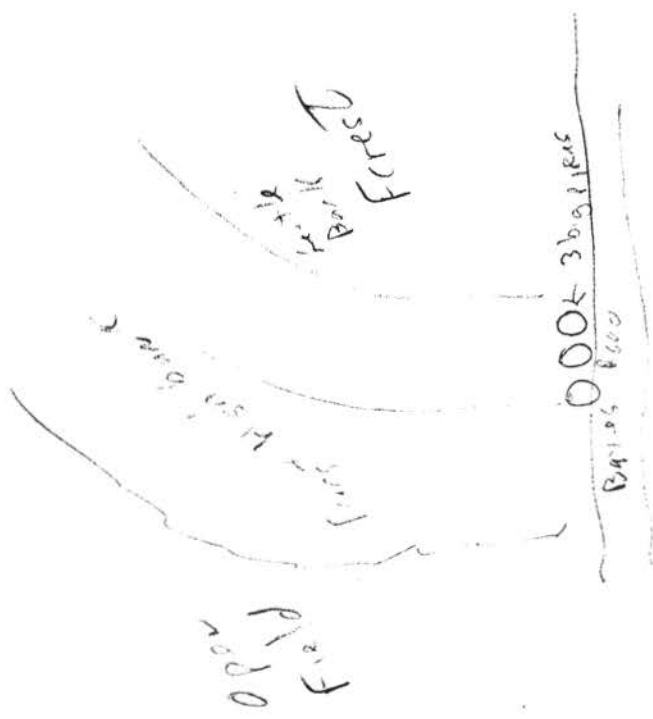
Pollution Impact Comments:

Miscellaneous QHEI Information

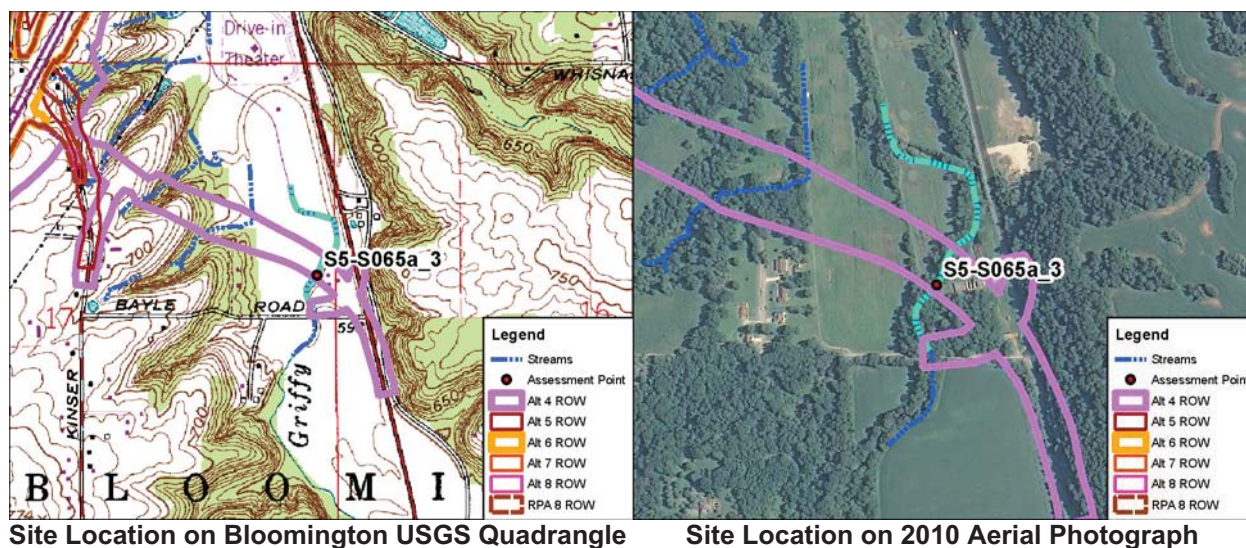
Subjective rating (1-10):	<input type="text" value="8"/>	% Riffle:	<input type="text" value="40"/>	Is reach representative of stream? <input type="text" value="Yes"/>
Aesthetic rating (1-10):	<input type="text" value="8"/>	% Run:	<input type="text" value="45"/>	
Canopy Cover (% Open):	<input type="text" value="50"/>	% Pool:	<input type="text" value="15"/>	

General QHEI Notes

PA
49 UP
50 down
51 LF
52 RF



Stream Impacts S5-S065a_3



Aquatic Resource: Stream
Stream Name: Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 61.5
Legal Drain (Y/N): N
UTME: 1761019 ft **UTMN:** 14241418 ft

USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 4.4 feet
OHWM Depth: 6.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 12.49 sq mi
Predominant Sub: Gravel/sand

Stream S5-S065a_3 – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	321	0.32	0.45
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts S5-S065a_3 at this location for the Alternatives are listed in the table above. Segments S5-S065a_3 and S5-S065a_1 were evaluated together. Segment S5-S065a_1 is upstream of the Bayles Road culverts and S5-S065a_3 is downstream of the road crossing. At the time of evaluation, this stream is a perennial stream with good habitat development and moderate sinuosity. The predominant substrate consists of gravel and sand. The stream has a wide riparian corridor associated with both banks. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5-S065a_3 segment are on the second page of this form. Implementation of the RPA 8 will decrease the amount of impacts at this location.

Stream Impacts S5-S065a_3



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
565a-1, -2, 3		Griffy Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/23/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 61.5

1] **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	55	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	25	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NUMBER OF BEST TYPES: ☒ 4 or more [2] ☒ 3 or less [0]

Substrate Maximum 20

Comments

2] **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount		% Amount		% Amount		AMOUNT
20	UNDERCUT BANKS [1]		POOLS > 70cm [2]		OXBOWS, BACKWATERS [1]	<input checked="" type="checkbox"/> EXTENSIVE > 75% [11]
20	OVERHANGING VEGETATION [1]		ROOTWADS [1]		AQUATIC MACROPHYTES [1]	<input type="checkbox"/> MODERATE 25 - 75% [7]
35	SHALLOWS (IN SLOW WATER) [1]		BOULDERS [1]	10	LOGS OR WOODY DEBRIS [1]	<input checked="" type="checkbox"/> SPARSE 5 - < 25% [3]
	ROOTMATS [1]					<input type="checkbox"/> NEARLY ABSENT < 5% [1]

Cover Maximum 20

Comments

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input checked="" type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel Maximum 20

Comments

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10

Comments

5] **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input checked="" type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input checked="" type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> SLOW [1]	
		<input type="checkbox"/> INTERMITTENT [-1]	
		<input type="checkbox"/> EDDIES [1]	

Indicate for reach - pools and riffles.

Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input checked="" type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input checked="" type="checkbox"/> MAXIMUM < 50cm [1]	<input checked="" type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input checked="" type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Riffle/Run Maximum 8

Comments

6] GRADIENT (8 ft/mi)	% POOL	% GLIDE	Gradient Maximum
<input type="checkbox"/> VERY LOW - LOW [2-4]	15		10
<input checked="" type="checkbox"/> MODERATE [6-10]			
<input type="checkbox"/> HIGH - VERY HIGH [10-6]			

OHW = 44' x 6.5' (13.4m)

S65a-1, -2, -3

IDEM		OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)	
Sample #	bioSample #	Stream Name	Location
		Griff Creek	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score 61.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

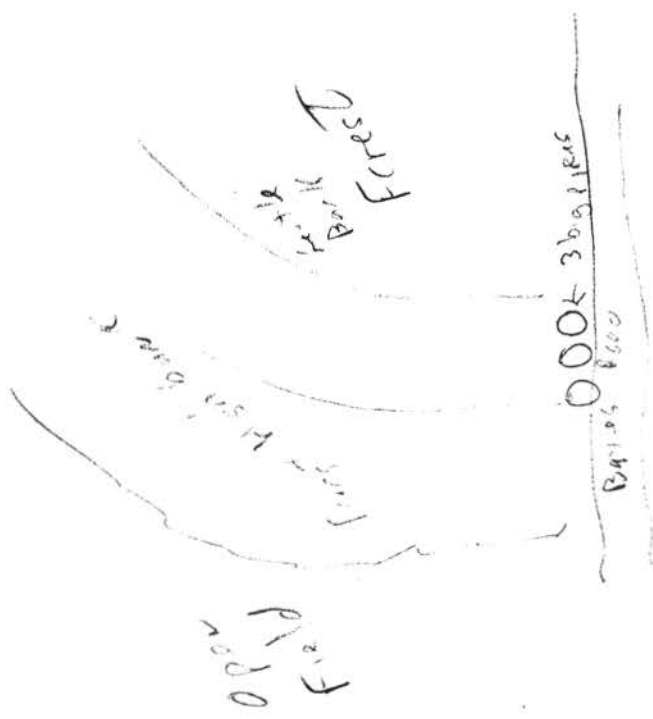
Pollution Impact Comments:

Miscellaneous QHEI Information

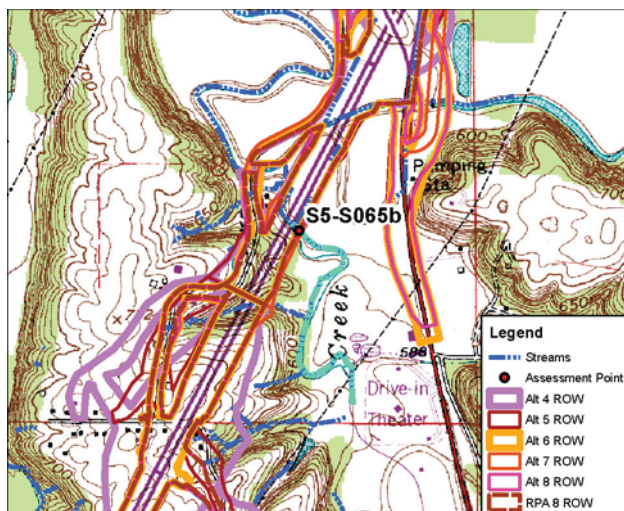
Subjective rating (1-10):	<input type="text" value=""/>	% Riffle:	<input type="text" value="40"/>	Is reach representative of stream? <input type="text" value="Yes"/>
Aesthetic rating (1-10):	<input type="text" value="8"/>	% Run:	<input type="text" value=""/>	
Canopy Cover (% Open):	<input type="text" value="50"/>	% Glide:	<input type="text" value="45"/>	
		% Pool:	<input type="text" value="15"/>	

General QHEI Notes

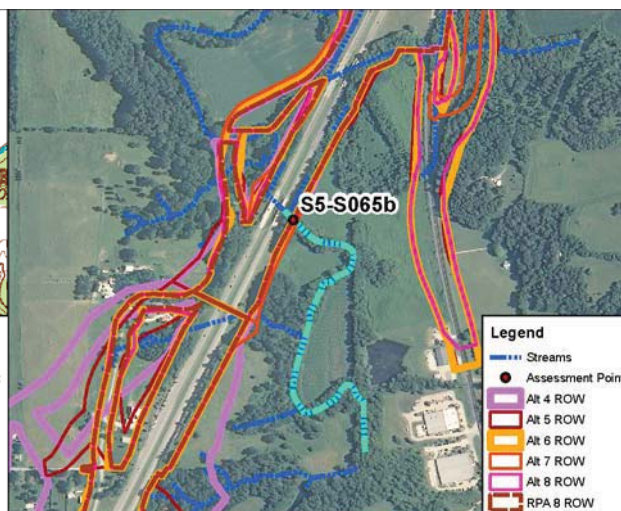
PA
49 UP
50 down
51 LF
52 RF



Stream Impacts S5-S065b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 37
Legal Drain (Y/N): N
UTME: 1769250 ft **UTMN:** 14246108 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 52.0 feet
OHWM Depth: 13.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 14.10 sq mi
Predominant Sub: Silt

Stream S5-S065b – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	113	0.13	0.32
5	115	0.14	0.33
6	102	0.12	0.27
7	137	0.16	0.42
8	102	0.12	0.27
RPA 8	102	0.12	0.27

Description of Potential Impact:

Impacts to S5-S065b at this location for the Alternatives are listed in the table above. Segments S5-S065b, S5-S065c, and S5-S065d were evaluated together. Segment S5-S065b is upstream of the existing SR 37 bridge, S5-S065c is the portion of stream being bridged, and S5-S065d is downstream of the bridge. These segments have experienced previous disturbance and exhibit no recovery at the time of the evaluation. This stream is a perennial stream with poor habitat development and low to no sinuosity where these Alternatives cross this stream. The predominant substrate consists of silt. The stream has a moderately wide riparian corridor associated with both banks. The adjacent floodplain is dominated by an old field. Photographs taken upstream and downstream for this location at S5-S065b are on the second page of this form. Implementation of the RPA 8 will decrease the amount of impacts to Griffy Creek at this location.

Stream Impacts S5-S065b



Photograph Taken Upstream



Photograph Taken Downstream



CWO Biological Studies QHE / Qualitative Habitat Evaluation Index

Sample #	bioSample #	Stream Name	Location
		GRIFFEY CREEK	SR-37 bridge & below
Surveyor	Sample Date	County	Macro SampleType
BW		Monroe	
			<input checked="" type="checkbox"/> Habitat Complete
			QHEI Score: 34

Modified
Warmwater
Habitat

1-Substrate (20 points maximum)

Substrate Score: 1

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

<u>Predominant</u>		<u>Present</u>		<u>Predominant</u>		<u>Present</u>	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	Bldrs/Slabs(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hardpan(4)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Boulders(9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detritus(3)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Cobble(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Muck(2)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Gravel(7)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Silt(2)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Sand(6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sludge(1)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Bedrock(5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial(0)	<input type="checkbox"/>

NOTE: ignore sludge originating from point sources; score based on natural substrates

✓ 4 substrates present (2)

Comments: $4 + 2 = 6 \quad (-5)$

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin

<input checked="" type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input checked="" type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input checked="" type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)

<u>Silt Cover</u>	<u>Embeddedness</u>
<input checked="" type="checkbox"/> Silt heavy(-2)	<input checked="" type="checkbox"/> Extensive(-2)
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)
<input checked="" type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Low/Normal(0)
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)

2-Instream Cover (20 points maximum)

Instream Cover Score:

Type (check ALL that apply)

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)	<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)	<input type="checkbox"/> Moderate 25-75% (7)
<input checked="" type="checkbox"/> Shallows(in slow water)(1)	<input checked="" type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)	<input checked="" type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Rootmats(1)	Comments: 5 + 2		<input type="checkbox"/> Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other	
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging	<input type="checkbox"/> Impound
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation	<input type="checkbox"/> Islands
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal	<input type="checkbox"/> Leveed
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging	<input type="checkbox"/> Bank shaping
Comments:			<input type="checkbox"/> One side channel modifications		


4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width		Erosion/Runoff-Floodplain quality (past 100 ft Riparian)		Bank Erosion	
L	R (per bank)	L	R (most predominant per bank)	L	R
<input type="checkbox"/>	<input type="checkbox"/> Wide >50m (4)	<input type="checkbox"/>	<input type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/>	<input type="checkbox"/> Conservation Tillage (1)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Moderate 10-50m (3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/>	<input type="checkbox"/> Urban or Industrial (0)
<input type="checkbox"/>	<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/>	<input type="checkbox"/> Residential, Park, New field (1)	<input type="checkbox"/>	<input type="checkbox"/> Mining, Construction (0)
<input type="checkbox"/>	<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/>	<input type="checkbox"/> Fenced pasture (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Open Pasture/Rowcrop (0)
<input type="checkbox"/>	<input type="checkbox"/> None (0)	Comments:		<input type="checkbox"/>	<input type="checkbox"/> None or little (3)
				<input type="checkbox"/>	<input type="checkbox"/> Moderate (2)
				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Heavy/Severe (1)

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 

<u>Max pool depth (check one)</u> <input checked="" type="checkbox"/> >1m (6) <input type="checkbox"/> 0.7-1m (4) <input type="checkbox"/> 0.4-0.7m (2) <input type="checkbox"/> 0.2-0.4m (1) <input type="checkbox"/> <0.2m (pool=0)	<u>Morphology (check only one, OR check two and AVERAGE)</u> <input type="checkbox"/> Pool width > riffle width (2) <input checked="" type="checkbox"/> Pool width = riffle width (1) <input type="checkbox"/> Pool width < riffle width (0)	<u>Pool/Run/Riffle current velocity (check all that apply)</u> <input type="checkbox"/> Eddies (1) <input type="checkbox"/> Fast (1) <input type="checkbox"/> Moderate (1) <input checked="" type="checkbox"/> Slow (1) <input type="checkbox"/> Torrential (-1) <input type="checkbox"/> Interstitial (-1) <input type="checkbox"/> Intermittent (-2) <input type="checkbox"/> No pool (0)
Comments: _____		

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score:

Riffle/run depth (check one)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable-e.g. cobble, boulder (2)	<input checked="" type="checkbox"/> Extensive (-1) <input type="checkbox"/> Normal/Low (1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input type="checkbox"/> Mod. stable-e.g. pea gravel (1)	<input type="checkbox"/> Moderate (0) <input type="checkbox"/> None (2)
<input checked="" type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable-e.g. sand, gravel (0)	<input checked="" type="checkbox"/> No riffle (0)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)	Comments:	

6-Gradient (10 points maximum)

Gradient Score: 10

Average width: 16 m Gradient: 10 (ft/mile) Drainage Area: 14.1 (square miles)

Comments: _____

OHWM 52' x 13'
(15.85)

Sample #	bioSample #	Stream Name	Location
3655, c, d		GRIFFIN CREEK	@ SR 37
Surveyor	Sample Date	County	Macro SampleType
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: <input type="text"/>

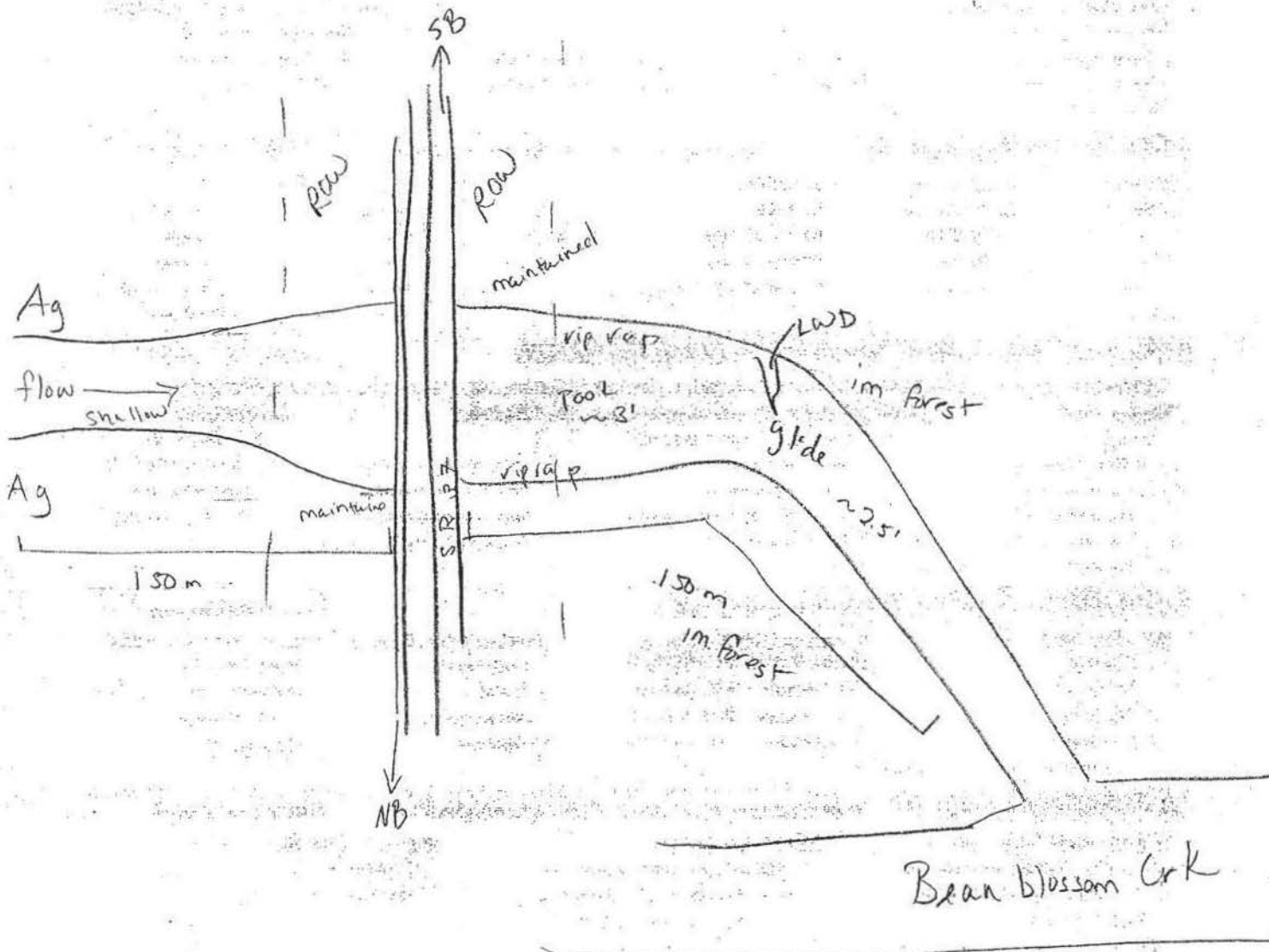
Major Suspected Impacts (Check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input checked="" type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

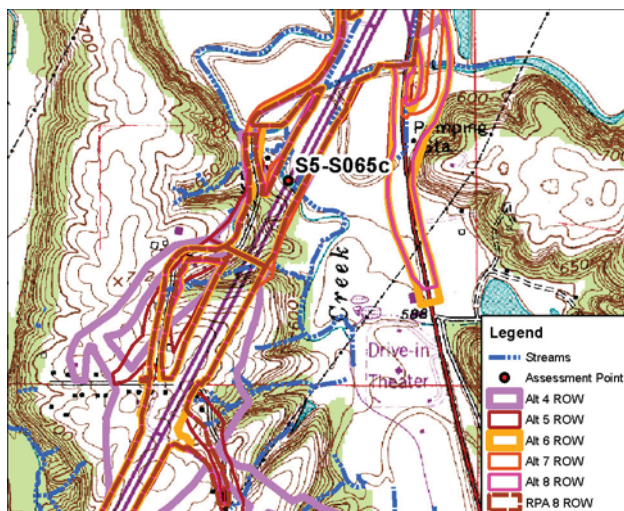
Subjective rating (1-10): 5 % Riffle: 0 Is reach representative of stream? Yes
Aesthetic rating (1-10): 3 % Run: 80
Canopy Cover (% Open): 30 % Glide: 10
% Pool: 10

Substrate very loose, shifty

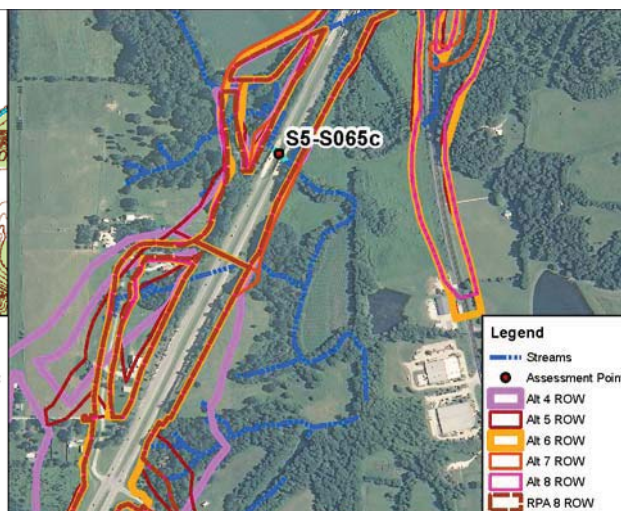
Pollution Impact Comments:



Stream Impacts S5-S065c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 37
Legal Drain (Y/N): N
UTME: 1769250 ft
UTMN: 14246108 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 52.0 feet
OHWM Depth: 13.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 14.10 sq mi
Predominant Sub: Silt

Stream S5-S065c – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	135	0.16	0.01
5	135	0.16	0.01
6	135	0.16	0.01
7	135	0.16	0.01
8	135	0.16	0.01
RPA 8	135	0.16	0.01

Description of Potential Impact:

Impacts to S5-S065c at this location for the Alternatives are listed in the table above. Segments S5-S065c, S5-S065b, and S5-S065d were evaluated together. Segment S5-S065b is upstream of the existing SR 37 bridge, S5-S065c is the portion of stream being bridged, and S5-S065d is downstream of the bridge. These segments have experienced previous disturbance and exhibit no recovery at the time of the evaluation. This stream is a perennial stream with poor habitat development and low to no sinuosity where these Alternatives cross this stream. The predominant substrate consists of silt. The stream has a moderately wide riparian corridor associated with both banks. The adjacent floodplain is dominated by an old field. Photographs taken upstream and downstream for this location at S5-S065b are on the second page of this form.

Stream Impacts S5-S065c



Photograph Taken Upstream



Photograph Taken Downstream

Sec 5-565 b, c, d

OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample # bioSample # Stream Name GRIFFEY CREEK Location SR-37 bridge & below

Surveyor RW Sample Date County Monroe Macro Sample Type ☒ Habitat Complete QHEI Score: 37

Modified
Warmwater
Habitat

1-Substrate (20 points maximum)

Substrate Score: 1

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant		Present		Predominant		Present	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin

<input checked="" type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)
Silt Cover		
<input checked="" type="checkbox"/> Silt heavy(-2)	<input type="checkbox"/> Embeddedness	
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Extensive(-2)	
<input type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Moderate(-1)	
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> Low/Normal(0)	
	<input type="checkbox"/> None(1)	

NOTE: ignore sludge originating from point sources; score based on natural substrates

☒ >4 substrates present(2)Comments: 4+2=6 (-5) 1

2-Instream Cover (20 points maximum)

Instream Cover Score: 8

Type (check ALL that apply)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)
<input type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)
<input checked="" type="checkbox"/> Shallows(in slow water)(1)	<input checked="" type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)
<input type="checkbox"/> Rootmats(1)	Comments: <u>5+3</u>	

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input checked="" type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments: <u> </u>				<input type="checkbox"/> One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width	Erosion/Runoff-Floodplain quality (past 100 ft Riparian)	Bank Erosion
<u>L</u> <u>R</u> (per bank)	<u>L</u> <u>R</u> (most predominant per bank)	<u>L</u> <u>R</u> (per bank)
<input type="checkbox"/> Wide >50m (4)	<input type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/> None or little (3)
<input checked="" type="checkbox"/> Moderate 10-50m (3)	<input checked="" type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/> Moderate (2)
<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> Residential, Park, New field (1)	<input checked="" type="checkbox"/> Heavy/Severe (1)
<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> Fenced pasture (1)	<input checked="" type="checkbox"/> Open Pasture/Rowcrop (0)
<input type="checkbox"/> None (0)	Comments: <u> </u>	

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 8

Max pool depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle current velocity (check all that apply)
<input checked="" type="checkbox"/> >1m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1m (4)	<input checked="" type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> Slow (1)
<input type="checkbox"/> <0.2m (pool=0)	Comments: <u> </u>	<input type="checkbox"/> Torrential (-1)
		<input type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> No pool (0)

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable-e.g. cobble, boulder (2)	<input checked="" type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input type="checkbox"/> Mod. stable-e.g. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input checked="" type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable-e.g. sand, gravel (0)	<input type="checkbox"/> None (2)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)	Comments: <u> </u>	<input checked="" type="checkbox"/> No riffle (0)

6-Gradient (10 points maximum)

Gradient Score: 10

Average width: 16m Gradient: 10 (ft/mile) Drainage Area: 14.1 (square miles)

Comments:

OHWM 52' x 13'
(15.85)

Sample #	bioSample #	Stream Name	Location
3655, c, d		GRIFFIN CREEK	@ SR 37
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: <input type="text"/>

Major Suspected Impacts (Check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input checked="" type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

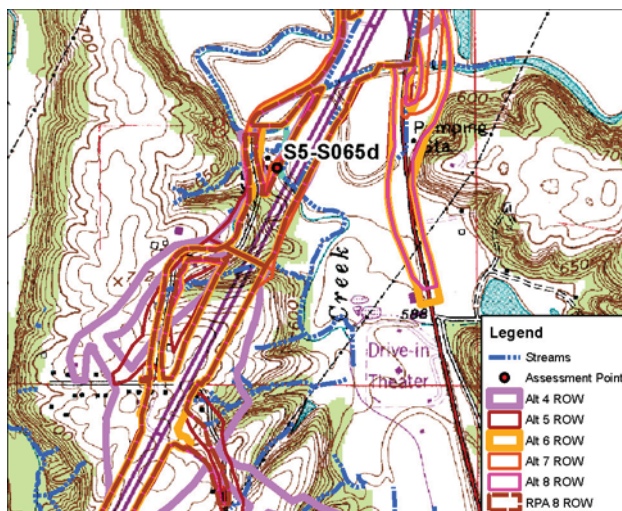
Subjective rating (1-10): 5 % Riffle: 0 Is reach representative of stream? Yes
Aesthetic rating (1-10): 3 % Run: 80
Canopy Cover (% Open): 30 % Glide: 10
% Pool: 10

Substrate very loose, shifty

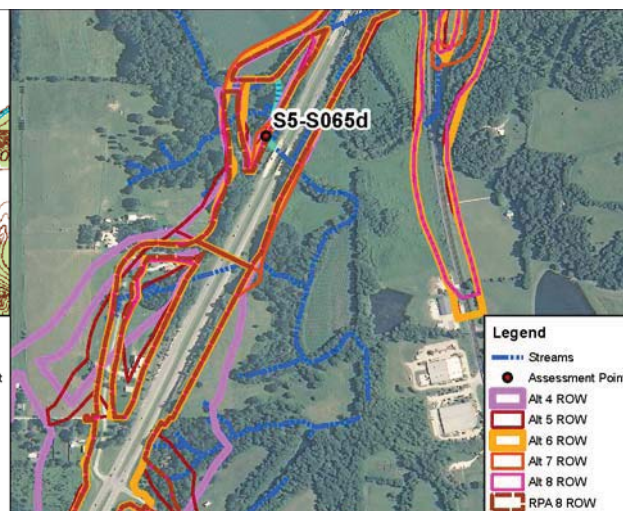
Pollution Impact Comments:



Stream Impacts S5-S065d



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 37
Legal Drain (Y/N): N
UTME: 1769250 ft
UTMN: 14246108 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 52.0 feet
OHWM Depth: 13.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 14.10 sq mi
Predominant Sub: Silt

Stream S5-S065d – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	220	0.26	0.77
5	175	0.21	0.72
6	125	0.15	0.59
7	251	0.30	0.76
8	131	0.16	0.61
RPA 8	102	0.12	0.57

Description of Potential Impact:

Impacts to S5-S065d at this location for the Alternatives are listed in the table above. Segments S5-S065b, S5-S065c, and S5-S065d were evaluated together. Segment S5-S065b is upstream of the existing SR 37 bridge, S5-S065c is the portion of stream being bridged, and S5-S065d is downstream of the bridge. These segments have experienced previous disturbance and exhibit no recovery at the time of the evaluation. This stream is a perennial stream with poor habitat development and low to no sinuosity where these Alternatives cross this stream. The predominant substrate consists of silt. The stream has a moderately wide riparian corridor associated with both banks. The adjacent floodplain is dominated by an old field. Photographs taken upstream and downstream for this location at S5-S065b are on the second page of this form. Implementation of the RPA 8 will decrease the amount of impacts to Griffy Creek at this location.

Stream Impacts S5-S065d



Photograph Taken Upstream



Photograph Taken Downstream



CWO Biological Studies QHE / Qualitative Habitat Evaluation Index

Sample #	bioSample #	Stream Name	Location
		GRIFFEY CREEK	SR-37 bridge & below
Surveyor	Sample Date	County	Macro SampleType
BW		Monroe	
			<input checked="" type="checkbox"/> Habitat Complete
			QHEI Score: 34

Modified
Warmwater
Habitat

1-Substrate (20 points maximum)

Substrate Score: 1

Check 1 Predominant Pool & 1 Predominant Riffle

Substrate Quality (check only 1, or check 2 and AVERAGE)

Check all that are present

P=Pool, R=Riffle

Predominant		Present		Predominant		Present	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	Bldrs/Slabs(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hardpan(4)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Boulders(9)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Detritus(3)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Cobble(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Muck(2)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Gravel(7)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Silt(2)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Sand(6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sludge(1)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Bedrock(5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial(0)	<input type="checkbox"/>

Substrate Origin

<input checked="" type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input checked="" type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input checked="" type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)

<u>Silt Cover</u>	<u>Embeddedness</u>
<input checked="" type="checkbox"/> Silt heavy(-2)	<input checked="" type="checkbox"/> Extensive(-2)
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)
<input checked="" type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Low/Normal(0)
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

✓ 4 substrates present (2)

Comments: $4 + 2 = 6 \quad (-5)$

2-Instream Cover (20 points maximum)

Instream Cover Score: 8

Type (check ALL that apply)

Amount (check only 1, or 2 and AVERAGE)

☐ Undercut banks(1) ☒ Deep pools(2) ☐ Oxbows(1)
☐ Overhanging vegetation(1) ☐ Rootwads(1) ☐ Aquatic macrophytes(1)
☒ Shallows(in slow water)(1) ☒ Boulders(1) ☒ Logs and woody debris(1)
☐ Rootmats(1) Comments: 5 + 2

☐ Extensive >75% (11)
☐ Moderate 25-75% (7)
☒ Sparse 5-25% (3)
☐ Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
				<input type="checkbox"/> Impound
				<input type="checkbox"/> Islands
				<input type="checkbox"/> Leveed
				<input type="checkbox"/> Bank shaping

Comments: ☐ One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width		Erosion/Runoff-Floodplain quality (past 100 ft Riparian)		Bank Erosion	
L	R (per bank)	L	R (most predominant per bank)	L	R
<input type="checkbox"/>	<input type="checkbox"/> Wide >50m (4)	<input type="checkbox"/>	<input type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/>	<input type="checkbox"/> Conservation Tillage (1)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Moderate 10-50m (3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/>	<input type="checkbox"/> Urban or Industrial (0)
<input type="checkbox"/>	<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/>	<input type="checkbox"/> Residential, Park, New field (1)	<input type="checkbox"/>	<input type="checkbox"/> Mining, Construction (0)
<input type="checkbox"/>	<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/>	<input type="checkbox"/> Fenced pasture (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Open Pasture/Rowcrop (0)
<input type="checkbox"/>	<input type="checkbox"/> None (0)	Comments:		<input type="checkbox"/>	<input type="checkbox"/> None or little (3)
				<input type="checkbox"/>	<input type="checkbox"/> Moderate (2)
				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Heavy/Severe (1)

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score:

<u>Max pool depth (check one)</u> <input checked="" type="checkbox"/> >1m (6) <input type="checkbox"/> 0.7-1m (4) <input type="checkbox"/> 0.4-0.7m (2) <input type="checkbox"/> 0.2-0.4m (1) <input type="checkbox"/> <0.2m (pool=0)	<u>Morphology (check only one, OR check two and AVERAGE)</u> <input type="checkbox"/> Pool width > riffle width (2) <input checked="" type="checkbox"/> Pool width = riffle width (1) <input type="checkbox"/> Pool width < riffle width (0)	<u>Pool/Run/Riffle current velocity (check all that apply)</u> <input type="checkbox"/> Eddies (1) <input type="checkbox"/> Fast (1) <input type="checkbox"/> Moderate (1) <input checked="" type="checkbox"/> Slow (1)	<input type="checkbox"/> Torrential (-1) <input type="checkbox"/> Interstitial (-1) <input type="checkbox"/> Intermittent (-2) <input type="checkbox"/> No pool (0)
Comments: _____			

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable-e.g. cobble, boulder (2)	<input checked="" type="checkbox"/> Extensive (-1) <input type="checkbox"/> Normal/Low (1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input type="checkbox"/> Mod. stable-e.g. pea gravel (1)	<input type="checkbox"/> Moderate (0) <input type="checkbox"/> None (2)
<input checked="" type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable-e.g. sand, gravel (0)	<input checked="" type="checkbox"/> No riffle (0)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)	Comments:	

6-Gradient (10 points maximum)

Gradient Score: 10

Average width: 16 m Gradient: 10 (ft/mile) Drainage Area: 14.1 (square miles)

OHWM 52' x 13'
(15.85)

IDEM OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
5655, c, d		GRIFFEY CREEK	@ SR 37
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score:

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input checked="" type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

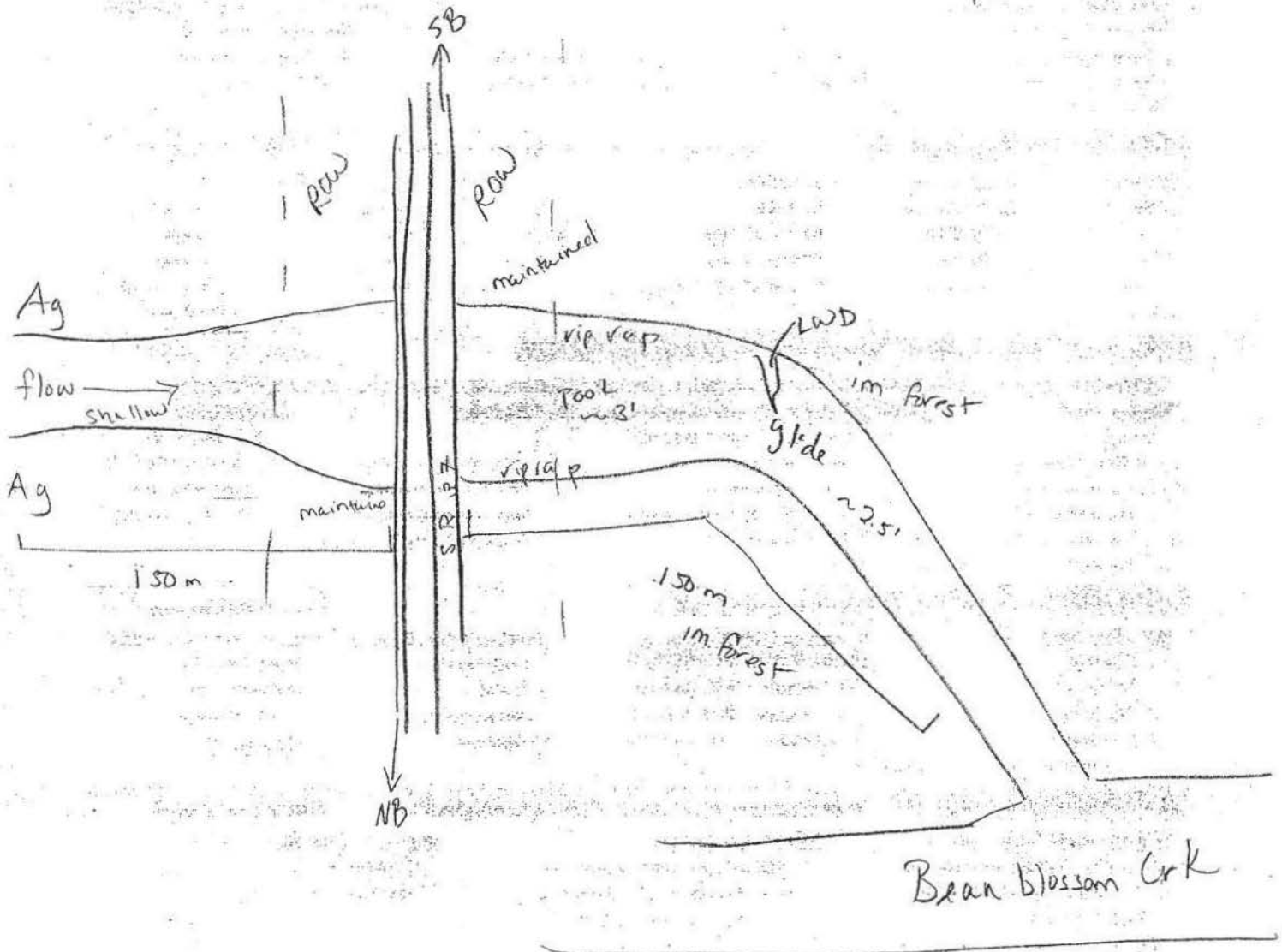
Pollution Impact Comments:

Miscellaneous QHEI Information

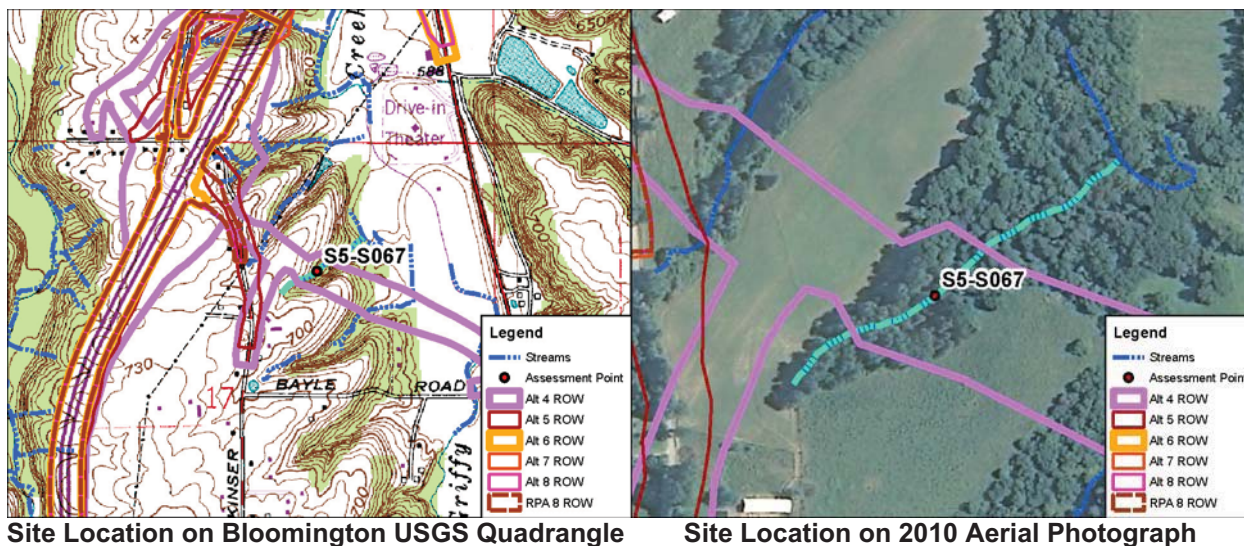
Subjective rating (1-10): 5 % Riffle: 0 Is reach representative of stream? Yes
 Aesthetic rating (1-10): 3 % Run: 80
 Canopy Cover (% Open): 30 % Glide: 10
 % Pool: 10

General QHEI Notes:

Substrate very loose, shifty



Stream Impacts S5-S067



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Griffy Creek	Section:	17
Quarter:	NE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	5.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.5 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	52	Watershed Area:	0.02 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Boulder/cobble
UTME: 1769375 ft	UTMN: 14242649 ft		

Stream S5-S067 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	415	0.05	1.81
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S067 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of boulder, cobble, and sand. There is a wide riparian corridor where Alternative 4 crosses this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S067 are on the second page of this form.

Stream Impacts S5-S067



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

52

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S067**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.02**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.21891**

LONG.

RIVER CODE

RIVER MILE

DATE **10/12/11**

SCORER **DEW/KSS**

COMMENTS **(Long: -86.54466) (Natural-Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="40%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="30%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="25%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **70.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **28**

TOTAL NUMBER OF SUBSTRATE TYPES: **4**

HHEI Metric Points

Substrate Max = 40

32

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS **OHW = 5'/0.5'** AVERAGE BANKFULL WIDTH (meters): **1.52**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **10%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

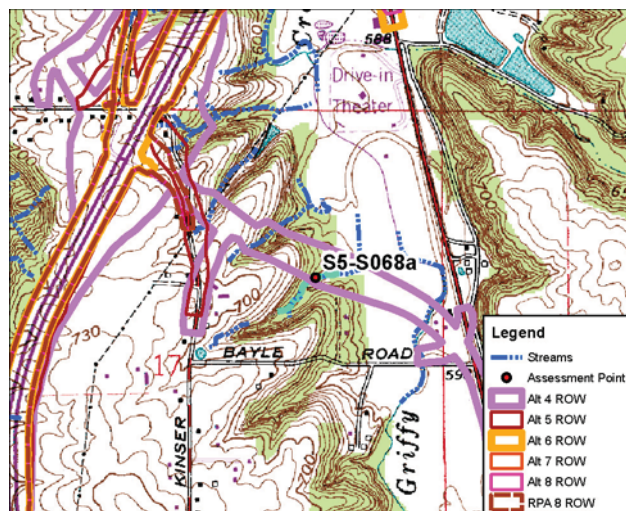
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

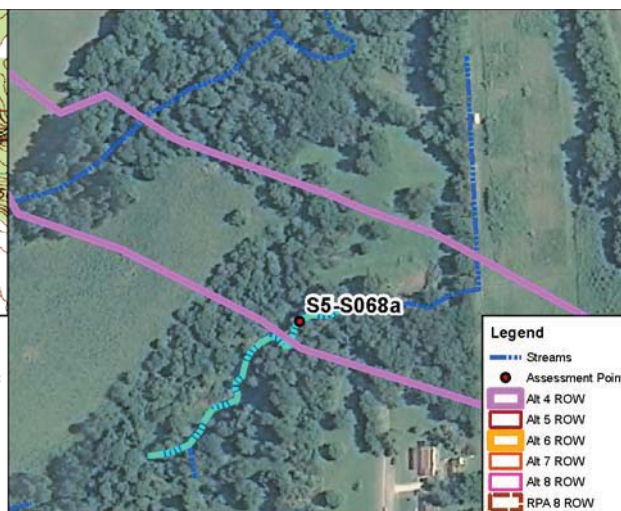
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

See Stream Assessment Form
FLOW → S5-S067 for site topographic map,
 aerial photograph, and resource photographs

Stream Impacts S5-S068a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Griffy Creek	Section:	17
Quarter:	NE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	2.5 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.8 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	44	Watershed Area:	0.09 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Bedrock/cobble
UTME: 1769912 ft	UTMN: 14242245 ft		

Stream S5-S068a –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	309	0.02	1.35
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S068a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately bedrock, cobble, and leaf pack. There is a wide riparian buffer associated with this stream. The floodplain consists of mature forests on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S068a are on the second page of this form.

Stream Impacts S5-S068a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

44

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S068a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.09

LENGTH OF STREAM REACH (ft) 200 LAT. 39.21779 LONG. RIVER CODE RIVER MILE

DATE 05/12/06 SCORER A Rogers COMMENTS (Long: -86.54277) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	19%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	40%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	21%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	10%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 61.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 28

TOTAL NUMBER OF SUBSTRATE TYPES: 6

HHEI Metric Points

Substrate Max = 40

34

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 4

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.5' / 0.8'

AVERAGE BANKFULL WIDTH (meters): 0.80

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **23** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **30%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

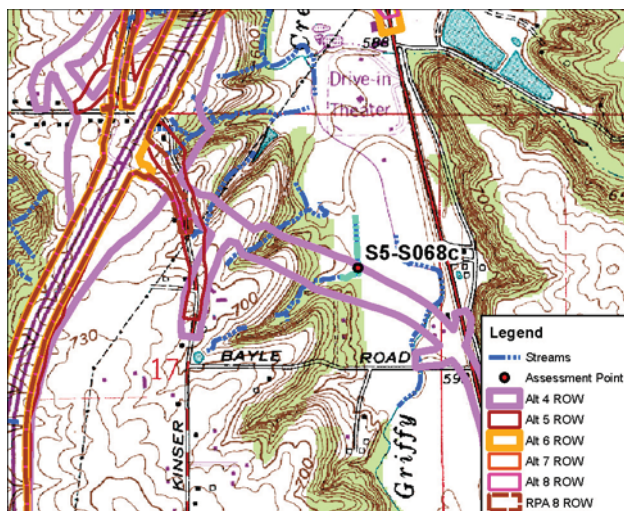
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

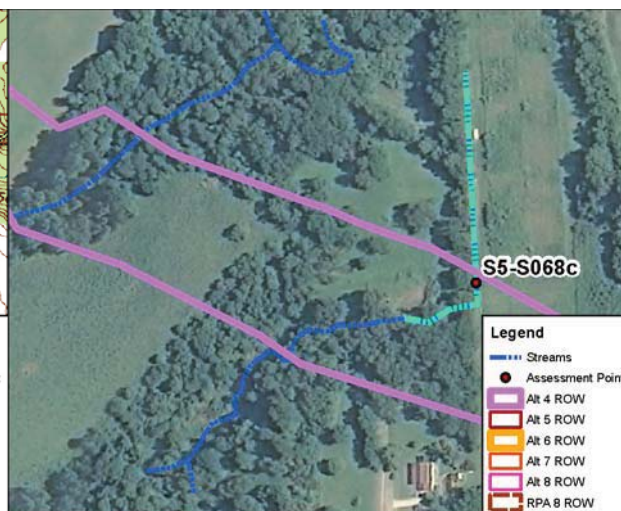
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S068a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S068c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 45
Legal Drain (Y/N): N
UTME: 1770374 ft
UTMN: 14242384 ft

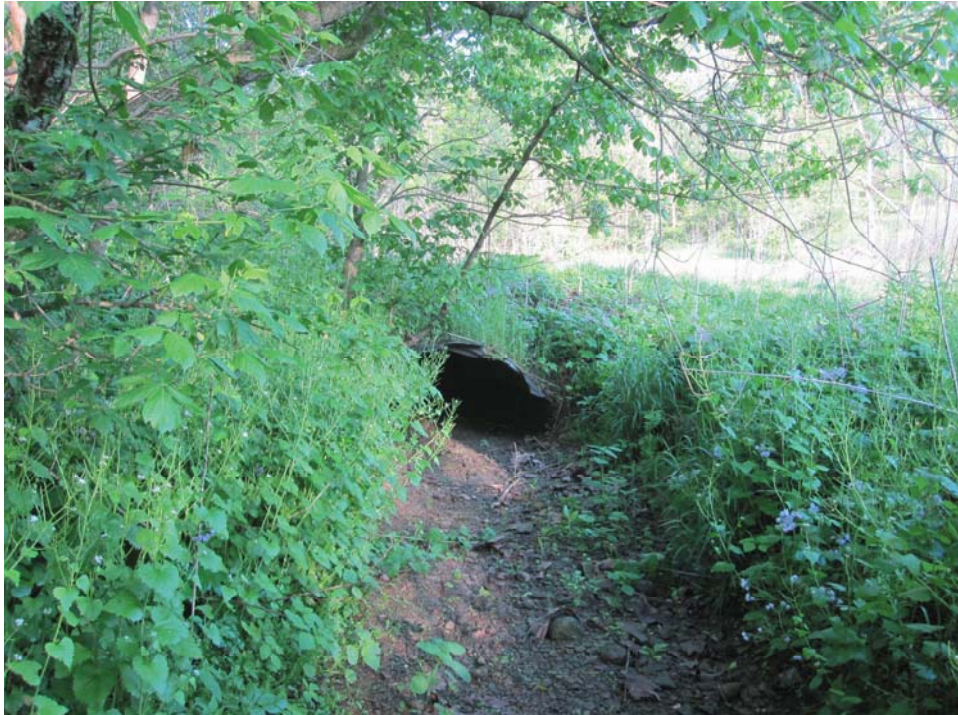
USGS Quadrangle: Bloomington
Section: 17
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 5.7 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.09 sq mi
Predominant Sub: Gravel/cobble

Stream S5-S068c –Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	286	0.04	0.49
5	0	0.00	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S068c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately gravel, cobble, and sand. The stream has a wide riparian corridor on the right bank and narrow riparian corridor on the left bank. The adjacent floodplain is dominated with mature forest on the right and an old field on the left where Alternative 4 crosses this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S068c are on the second page of this form.

Stream Impacts S5-S068c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

45

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S068c** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.09**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.21817** LONG. RIVER CODE RIVER MILE

DATE **04/26/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.54114) (Natural-Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input checked="" type="checkbox"/> 10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/> 0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/> 30%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 40%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 20%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **30.00%** (A)

Substrate Percentage Check **100%** (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **21**TOTAL NUMBER OF SUBSTRATE TYPES: **4**HHEI
Metric
PointsSubstrate
Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull
Width
Max=30

20

COMMENTS **OHW = 5.7'/0.4'** AVERAGE BANKFULL WIDTH (meters): **1.75**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **75%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

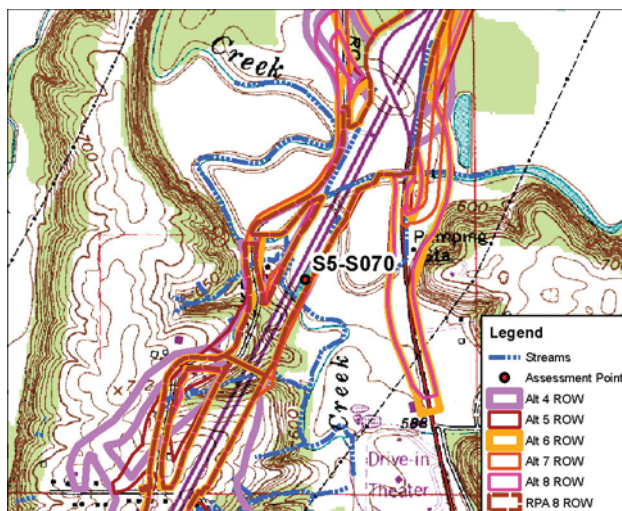
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

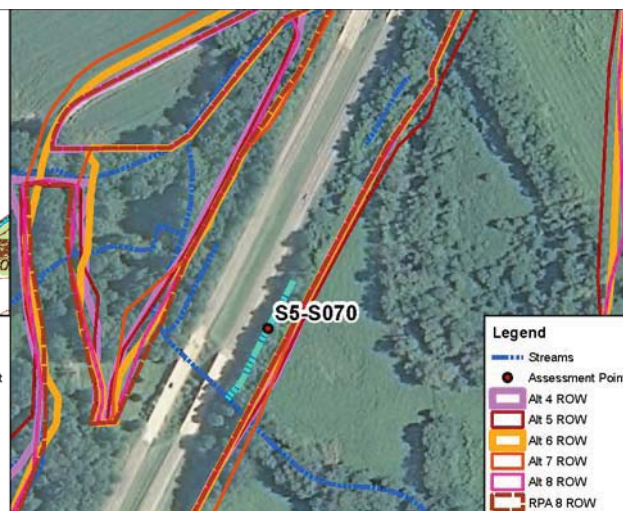
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S068c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S070



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Roadside Ditch
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 36
Legal Drain (Y/N): N
UTME: 1769427 ft
UTMN: 14246218 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.0 feet
OHWM Depth: 0.5 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Clay

Stream S5-S070 – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	351	0.02	0.40
5	351	0.02	0.40
6	351	0.02	0.39
7	351	0.02	0.40
8	351	0.02	0.39
RPA 8	351	0.02	0.39

Description of Potential Impact:

Impacts to S5-S070 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located at the edge of existing INDOT ROW. Its substrate is predominately clay. This ditch flows directly into Griffy Creek. There is a narrow riparian buffer associated with this artificial channel. The floodplain consists of INDOT ROW on the right bank and agricultural land on the left. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S070 are on the second page of this form.

Stream Impacts S5-S070



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

36

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S070** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.22871** LONG. RIVER CODE RIVER MILE

DATE **05/12/06** SCORER **A Rogers** COMMENTS **(Long: -86.54441) (Roadside Ditch-Modified Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="6%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="4%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="90%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

6

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25

COMMENTS **ditch is a long pool**MAXIMUM POOL DEPTH (centimeters): **15**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 2.0' / 0.5'**AVERAGE BANKFULL WIDTH (meters): **0.65**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information: **132 Upstream / 133 Downstream / 134 Right Bank / 135 Left Bank**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **70%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

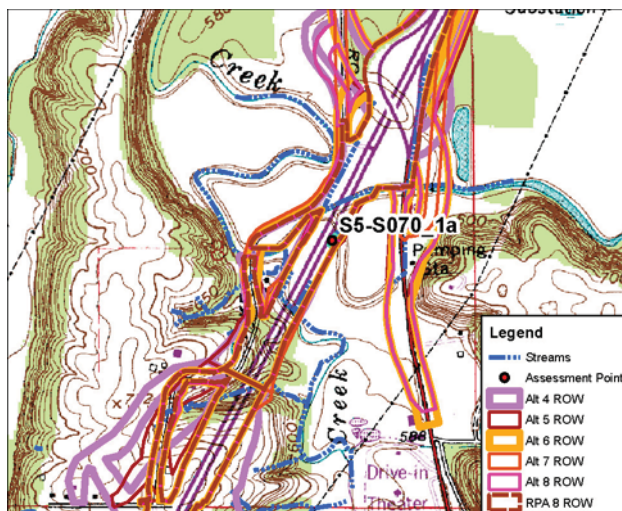
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

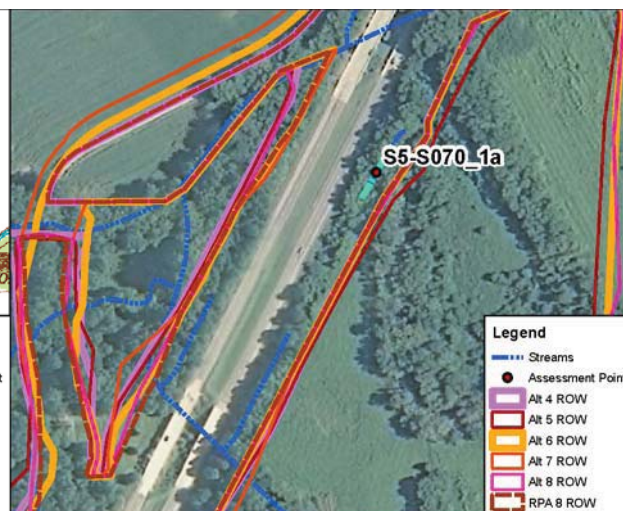
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S070 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S070_1a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Concrete Gutter
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 17
Legal Drain (Y/N): N
UTME: 1769722 ft **UTMN:** 14246762 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.0 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Artificial

Stream S5-S070_1a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	155	0.01	0.39
5	155	0.01	0.47
6	155	0.01	0.40
7	155	0.01	0.40
8	155	0.01	0.40
RPA 8	155	0.01	0.40

Description of Potential Impact:

Impacts to S5-S070_1a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter. There is a wide riparian corridor consisting of immature forest on the right bank and a narrow riparian corridor consisting of maintained INDOT ROW on the left bank. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S070_1a are on the second page of this form.

Stream Impacts S5-S070_1a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S070_1a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 150

LAT. 39.23020

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.54337) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 1

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 2.0'/0.4'

AVERAGE BANKFULL WIDTH (meters): 0.60

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity: **0.00**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

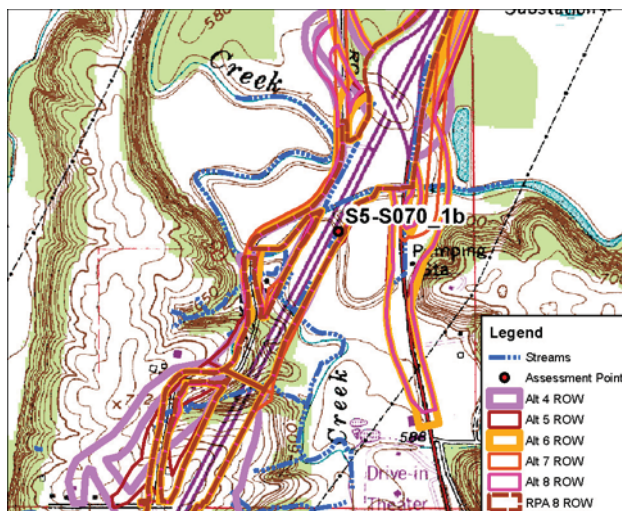
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S070_1a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S070_1b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 14
Legal Drain (Y/N): N
UTME: 1769783 ft
UTMN: 14246862 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.8 feet
OHWM Depth: 0.3 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Silt/leaf pack

Stream S5-S070_1b – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	52	0.01	0.23
5	52	0.01	0.31
6	52	0.01	0.24
7	52	0.01	0.24
8	52	0.01	0.24
RPA 8	52	0.01	0.24

Description of Potential Impact:

Impacts to S5-S070_1b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of silt and leaf pack. There is a wide riparian corridor consisting of immature forest and wetland on the right bank and a narrow riparian corridor consisting of maintained INDOT ROW on the left bank. This ditch provides some hydrology to Wetland W62. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S070_1b are on the second page of this form.

Stream Impacts S5-S070_1b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

14

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S070_1b** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.23047** LONG. RIVER CODE RIVER MILE

DATE **04/24/12** SCORER **KSS** COMMENTS **(Long: -86.54315) (Natural-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="70%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="20%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="10%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

9

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW = 1.8'/0.3'** AVERAGE BANKFULL WIDTH (meters): **0.55**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek (>2 miles)** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/19/12** Quantity: **0.20**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **30%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

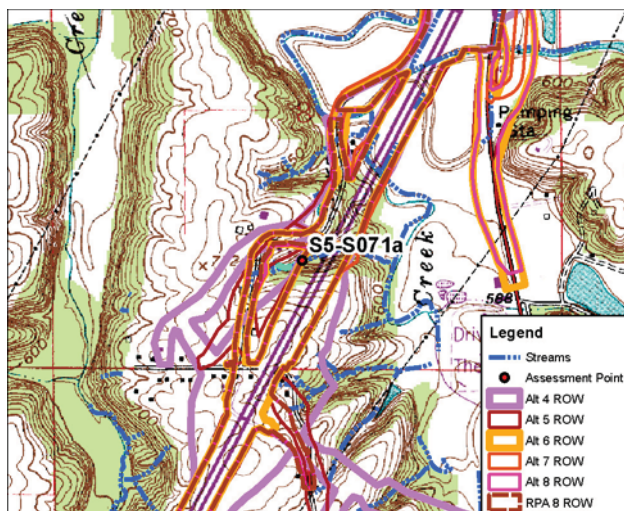
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S070_1b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S071a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Griffy Creek	Section:	8
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	8.2 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.9 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	50	Watershed Area:	0.06 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Cobble/gravel
UTME: 1768509 ft	UTMN: 14245118 ft		

Stream S5-S071a – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	82	0.02	0.34
5	32	0.01	0.26
6	31	0.01	0.24
7	31	0.01	0.24
8	31	0.01	0.24
RPA 8	31	0.01	0.24

Description of Potential Impact:

Impacts to S5-S071a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of cobble, gravel, and bedrock. There is a moderately wide riparian buffer along the left bank consisting of immature forest. Immature forest is the dominant habitat on the right bank floodplain, as well, where these Alternatives cross this stream. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S071a are on the second page of this form.

Stream Impacts S5-S071a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

50

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S071a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22570

LONG.

RIVER CODE

RIVER MILE

DATE 04/24/12

SCORER KSS

COMMENTS (Long: -86.54768) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	20%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	40%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	30%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 60.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 21

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 5

Pool Depth Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 8.2'/0.9'

AVERAGE BANKFULL WIDTH (meters): 2.50

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Griffy Creek	Distance from Evaluated Stream	0.20
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/19/12** Quantity: **0.20**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **45%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

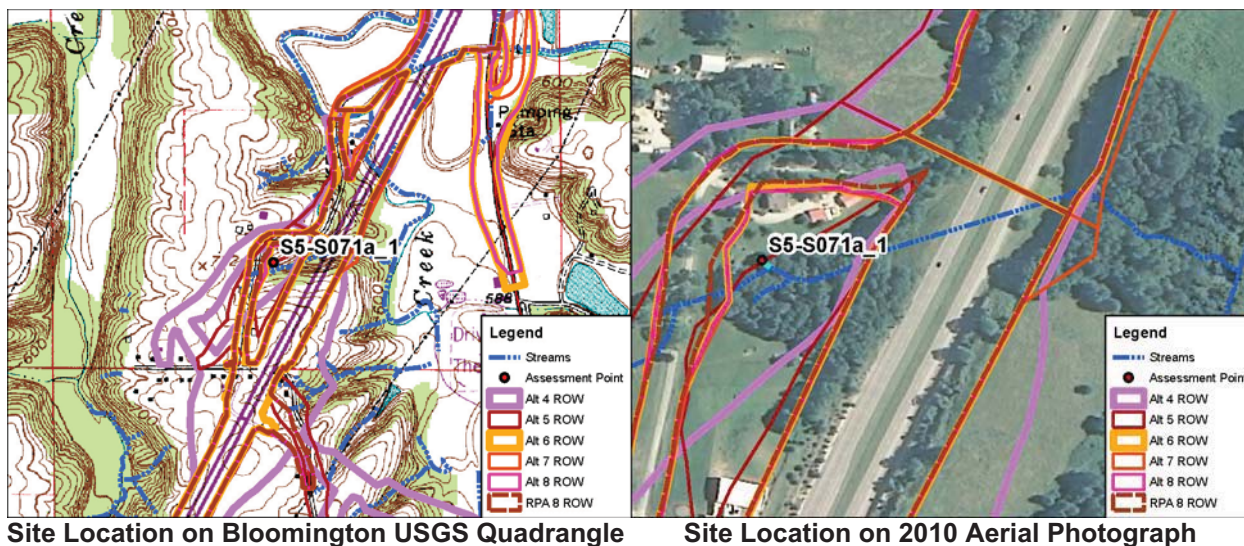
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S071a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S071a_1



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib. Griffy Creek	Section:	8
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	3.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.5 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	24	Watershed Area:	0.06 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Cobble/artificial
UTME: 1768218 ft	UTMN: 14245100 ft		

Stream S5-S071a_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	18	0.01	0.00
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S071a_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of cobble and large riprap. There is a moderately wide riparian corridor along the left bank where Alternative 5 crosses this stream. The floodplain of the left bank consists of a residential yard. The right bank consists of a narrow immature forested floodplain. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S071a_1 are on the second page of this form.



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

24

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S071a_1

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.06

LENGTH OF STREAM REACH (ft) 45

LAT. 39.22565

LONG.

RIVER CODE

RIVER MILE

DATE 04/24/12

SCORER KSS

COMMENTS (Long: -86.54871) (Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☒ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	40%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	15%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	30%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 40.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

19

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW = 3'/0.5'

AVERAGE BANKFULL WIDTH (meters): 0.90

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Griffy Creek	Distance from Evaluated Stream	0.25
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/19/12** Quantity: **0.20**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **80%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

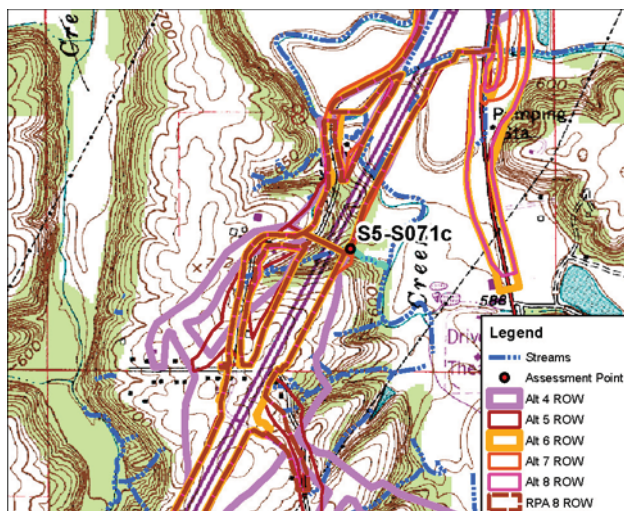
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S071a_1 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-071c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 17
Legal Drain (Y/N): N
UTME: 1769077 ft **UTMN:** 14245264 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.0 feet
OHWM Depth: 0.6 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.05 sq mi
Predominant Sub: Sand/silt

Stream S5-071c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	18	0.01	0.03
5	4	0.01	0.02
6	4	0.01	0.02
7	60	0.01	0.23
8	4	0.01	0.02
RPA 8	4	0.01	0.02

Description of Potential Impact:

Impacts to S5-071c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of sand and silt. There is a wide riparian corridor where the Alternatives cross this stream. The adjacent floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-071c are on the second page of this form.

Stream Impacts S5-071c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

17

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S071c

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.05

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22609

LONG.

RIVER CODE

RIVER MILE

DATE 10/12/11

SCORER DEW/KSS

COMMENTS (Long: -86.54567) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	44%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	46%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 3'/0.6'

AVERAGE BANKFULL WIDTH (meters): 0.91

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **5%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

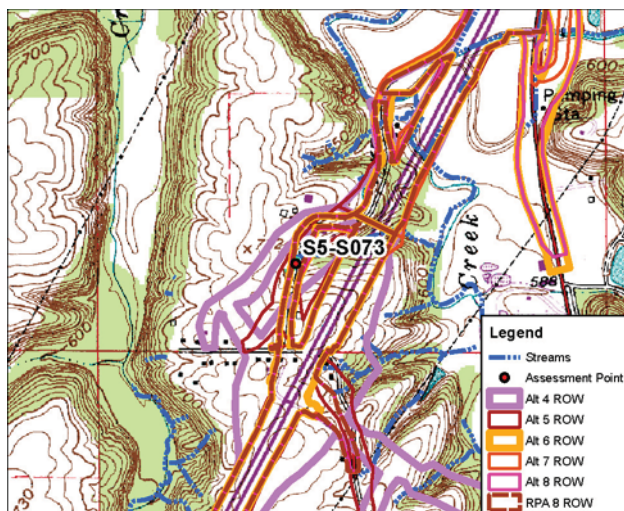
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S071c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S073



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 28
Legal Drain (Y/N): N
UTME: 1767979 ft **UTMN:** 14244916 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.2 feet
OHWM Depth: 0.9 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Gravel/sand

Stream S5-S073 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	212	0.01	0.00
6	163	0.01	0.00
7	166	0.01	0.00
8	163	0.01	0.00
RPA 8	147	0.01	0.00

Description of Potential Impact:

Impacts to S5-S073 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a no riparian corridor associated with this stream. The adjacent floodplain consists of open pasture. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S073 are on the second page of this form.

Stream Impacts S5-S073



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S073** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.22515** LONG. RIVER CODE RIVER MILE

DATE **05/12/06** SCORER **A Rogers** COMMENTS **(Long: -86.54955) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="50%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="45%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

18

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): **3**

Pool Depth Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 2.2' / 0.9'** AVERAGE BANKFULL WIDTH (meters): **0.70**

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

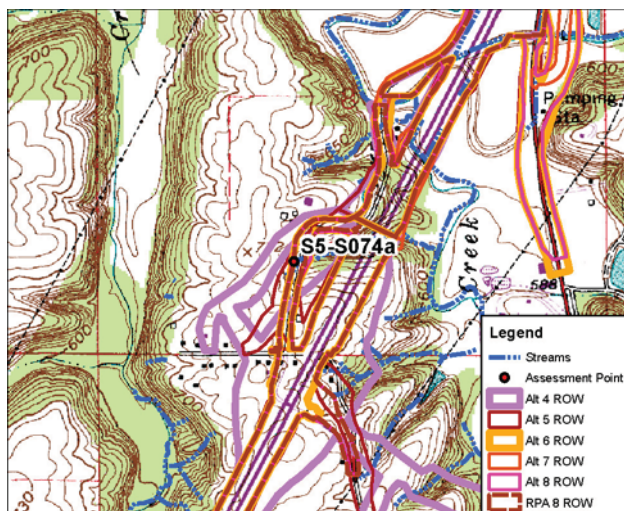
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S073 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S074a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 28
Legal Drain (Y/N): N
UTME: 1767964 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.5 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Gravel/sand

Stream S5-S074a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	71	0.01	0.00
6	61	0.01	0.00
7	61	0.01	0.00
8	61	0.01	0.00
RPA 8	45	0.01	0.00

Description of Potential Impact:

Impacts to S5-S074a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is a no riparian corridor associated with this stream. The adjacent floodplain consists of open pasture. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S074a are on the second page of this form.

Stream Impacts S5-S074a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

28

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S074a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 70

LAT. 39.22529

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54960) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	50%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	45%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage
Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI
Metric
PointsSubstrate
Max = 40

18

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth
Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.5' / 1.0'

AVERAGE BANKFULL WIDTH (meters):

0.90

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

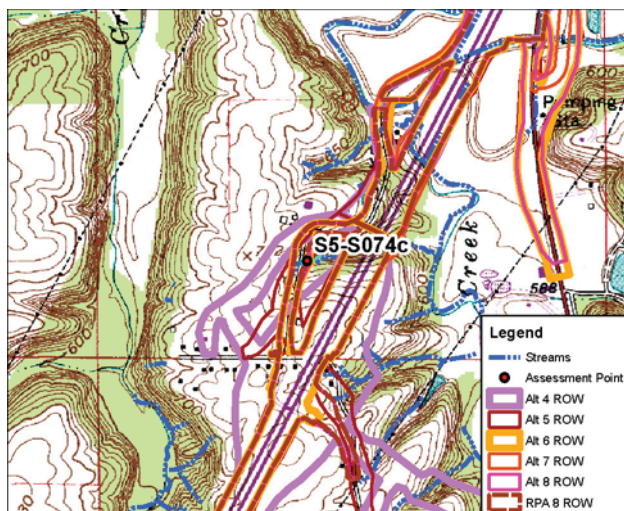
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

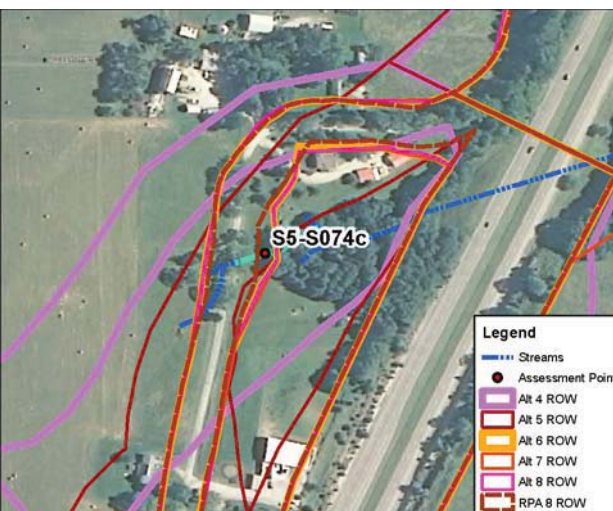
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

See Stream Assessment Form
FLOW  S5-S074a for site topographic map,
 aerial photograph, and resource photographs

Stream Impacts S5-S074c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 28
Legal Drain (Y/N): N
UTME: 1768102 ft **UTMN:** 14245013 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.5 feet
OHWM Depth: 1.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Gravel/sand

Stream S5-S074c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	125	0.01	0.08
6	114	0.01	0.01
7	114	0.01	0.01
8	114	0.01	0.01
RPA 8	65	0.01	0.00

Description of Potential Impact:

Impacts to S5-S074c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The predominant substrate consists of gravel and sand. There is no riparian corridor where the Alternatives cross this stream. The adjacent floodplain consists of new fields. Photographs taken upstream and downstream near the area where these Alternatives cross S5-S074c are on the second page of this form.

Stream Impacts S5-S074c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S074c**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.22542**

LONG.

RIVER CODE

RIVER MILE

DATE **05/12/06**

SCORER **A Rogers**

COMMENTS **(Long: -86.54912) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL

☒ RECOVERED

☐ RECOVERING

☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="5%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="50%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="45%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **5.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**

TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

18

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): **4**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 2.5' / 1.0'** AVERAGE BANKFULL WIDTH (meters): **0.90**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☐ N Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): ☐ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

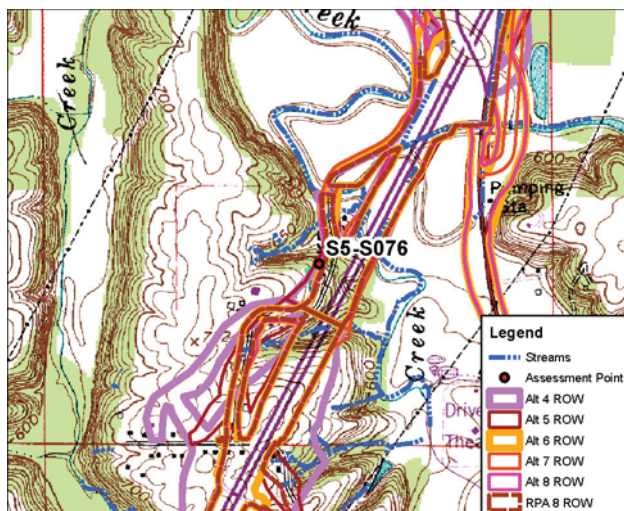
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S074c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S076



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 27
Legal Drain (Y/N): N
UTME: 17687775 ft **UTMN:** 14245872 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.5 feet
OHWM Depth: 0.7 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Sand/silt

Stream S5-S076 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	44	0.01	0.61
5	275	0.02	0.84
6	0	0.00	0.29
7	27	0.01	0.43
8	23	0.01	0.44
RPA 8	0	0.00	0.32

Description of Potential Impact:

Impacts to S5-S076 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately sand and silt. There is a moderately-wide riparian buffer associated with this stream. The adjacent floodplain consists of mature forests along both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S076 are on the second page of this form.

Stream Impacts S5-S076



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

27

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S076

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.22777 LONG. RIVER CODE RIVER MILE

DATE 10/12/11 SCORER DEW/KSS COMMENTS (Long: -86.54673) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	44%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	46%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 3.5'/0.7' AVERAGE BANKFULL WIDTH (meters): 1.07

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **5%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

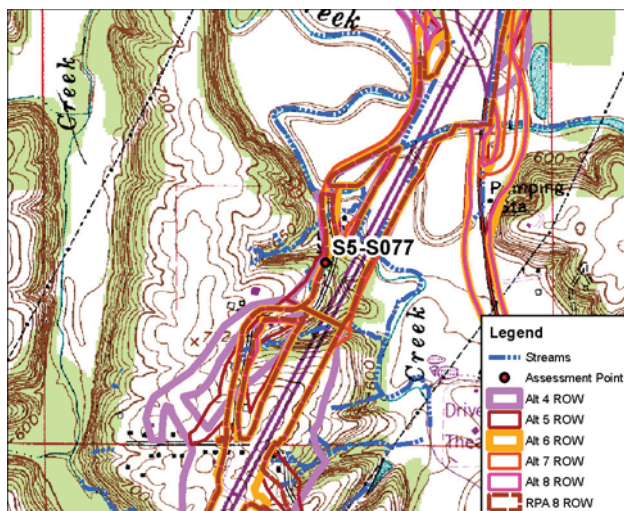
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S076 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S077



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 40
Legal Drain (Y/N): N
UTME: 1768841 ft
UTMN: 14245882 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 1.7 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Sand/gravel

Stream S5-S077 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	221	0.01	0.31
5	221	0.01	0.31
6	168	0.01	0.30
7	192	0.01	0.29
8	212	0.01	0.29
RPA 8	98	0.01	0.26

Description of Potential Impact:

Impacts to S5-S077 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately sand and gravel. There is a moderately-wide riparian buffer associated with this stream. The adjacent floodplain consists of mature forests along both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S077 are on the second page of this form.

Stream Impacts S5-S077



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

40

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S077

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.22780 LONG. RIVER CODE RIVER MILE

DATE 05/12/06 SCORER A Rogers COMMENTS (Long: -86.54649) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	5%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	39%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	41%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

20

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): 9

Pool Depth Max = 30

15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 1.7' / 0.4' AVERAGE BANKFULL WIDTH (meters): 0.52

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **20%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

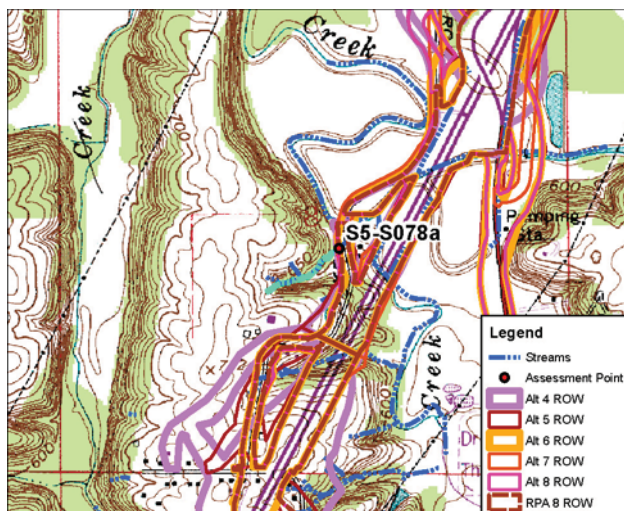
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S077 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S078a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 33
Legal Drain (Y/N): N
UTME: 1768817 ft
UTMN: 14246329 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 6.0 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Sand/silt

Stream S5-S078a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	65	0.01	0.23
5	64	0.01	0.23
6	44	0.01	0.15
7	65	0.01	0.22
8	55	0.01	0.19
RPA 8	34	0.01	0.10

Description of Potential Impact:

Impacts to S5-S078a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately sand and silt. There is a narrow riparian buffer associated with this stream. The floodplain consists of old fields along both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S078a are on the second page of this form.

Stream Impacts S5-S078a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

33

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S078a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22902

LONG.

RIVER CODE

RIVER MILE

DATE 10/17/11

SCORER DEW/KSS

COMMENTS (Long: -86.54657) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	40%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	45%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

9

TOTAL NUMBER OF SUBSTRATE TYPES:

4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 6'/0.4'

AVERAGE BANKFULL WIDTH (meters):

1.82

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **30%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

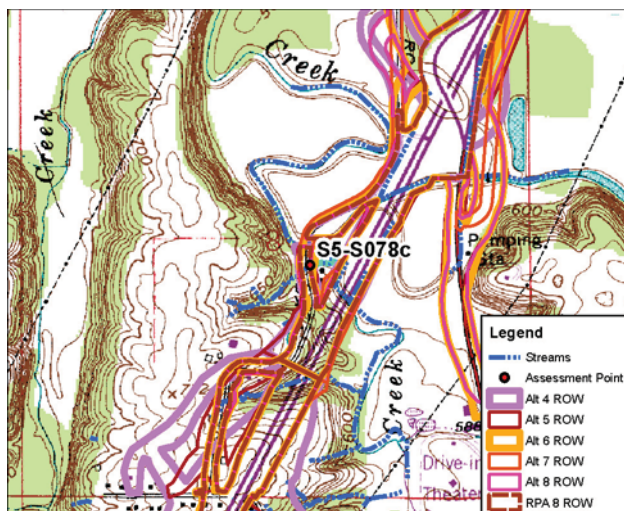
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

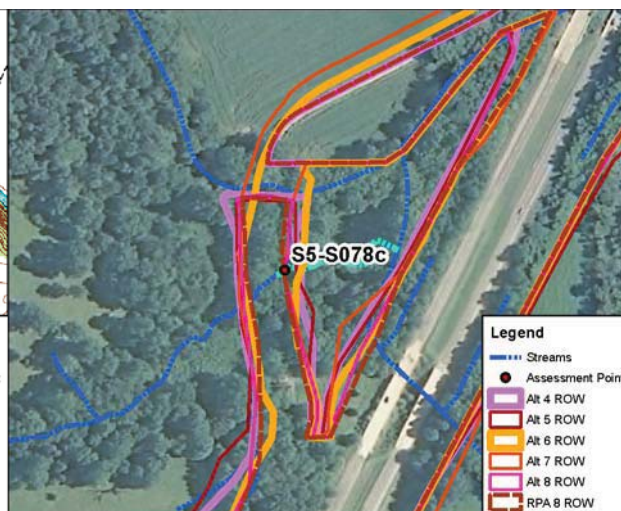
FLOW →

See Stream Assessment Form
S5-S078a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S078c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 33
Legal Drain (Y/N): N
UTME: 1768912 ft
UTMN: 14246407 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 6.0 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Sand/silt

Stream S5-S078c – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	72	0.01	0.22
5	60	0.01	0.22
6	74	0.01	0.21
7	22	0.01	0.10
8	23	0.01	0.10
RPA 8	25	0.01	0.09

Description of Potential Impact:

Impacts to S5-S078c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is mostly sand and silt. There is a narrow riparian buffer associated with this stream. The right bank floodplain consists of a residential yard and the left bank is predominately new field. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S078c are on the second page of this form.

Stream Impacts S5-S078c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

33

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S078c

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200

LAT. 39.22923

LONG.

RIVER CODE

RIVER MILE

DATE 10/17/11

SCORER DEW/KSS

COMMENTS (Long: -86.54623) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	40%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	10%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	45%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS OHW = 6'/0.4'

AVERAGE BANKFULL WIDTH (meters): 1.83

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Griffy Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **30%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

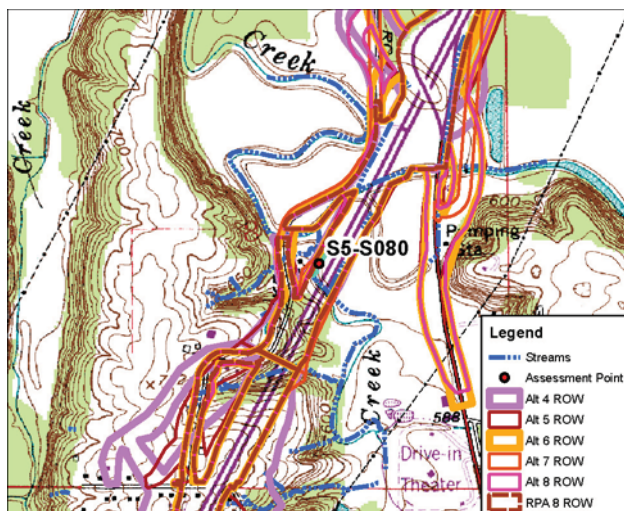
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

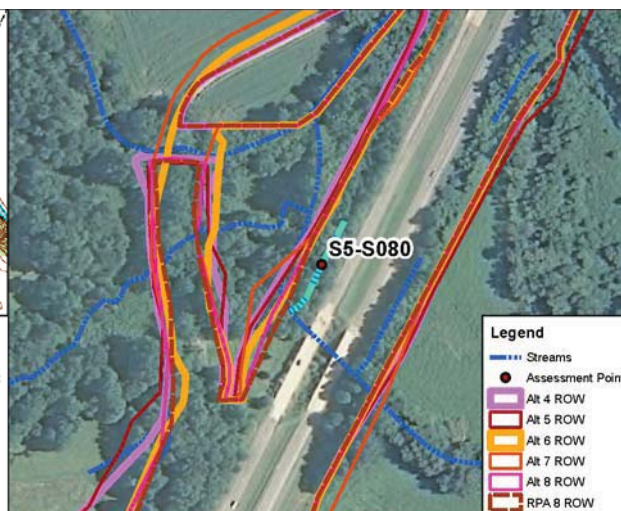
FLOW →

See Stream Assessment Form
S5-S078c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S080



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib. Griffy Creek
Quarter: SE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Roadside Ditch
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 43
Legal Drain (Y/N): N
UTME: 1769236 ft
UTMN: 14246325 ft

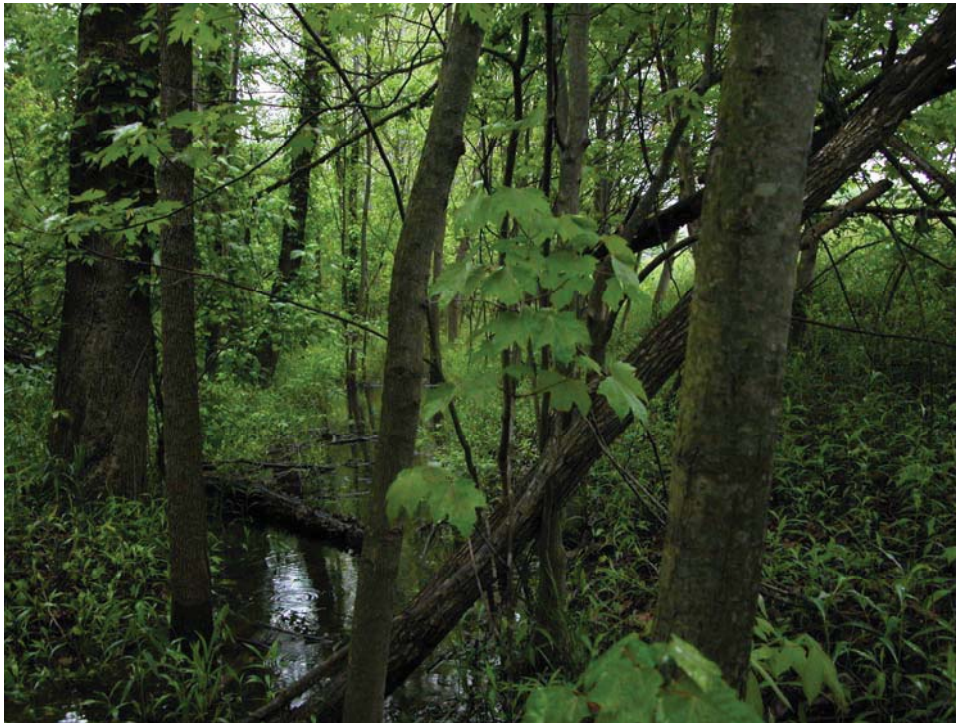
USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.1 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.01 sq mi
Predominant Sub: Clay

Stream S5-S080 – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	274	0.01	0.01
5	274	0.01	0.01
6	274	0.01	0.01
7	274	0.01	0.01
8	274	0.01	0.01
RPA 8	274	0.01	0.01

Description of Potential Impact:

Impacts to S5-S080 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. This roadside ditch flows along SR 37 directly into Griffy Creek. There is a narrow riparian buffer associated with this clay bottom ditch. The floodplain consists of the urban roadway on the left bank and immature forest on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S080 are on the second page of this form.

Stream Impacts S5-S080



Photograph Taken Upstream



Photograph Taken Downstream and toward roadway



Primary Headwater Habitat Evaluation Form

43

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S080

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.22901 LONG. RIVER CODE RIVER MILE

DATE 05/12/06 SCORER A Rogers COMMENTS (Long: -86.54509) (Roadside Ditch-Modified Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	80%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	3%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

8

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS ditch is a long pool

MAXIMUM POOL DEPTH (centimeters): 25

Pool Depth Max = 30

30

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 2.1' / 0.4'

AVERAGE BANKFULL WIDTH (meters): 0.64

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Griffy Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☐ N Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information: **111 Upstream / 112 Downstream / 113 Right Bank / 114 Left Bank**

Elevated Turbidity? (Y/N): ☐ Y Canopy (% open): **90%**

Were samples collected for water chemistry? (Y/N): ☐ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☐ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☐ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

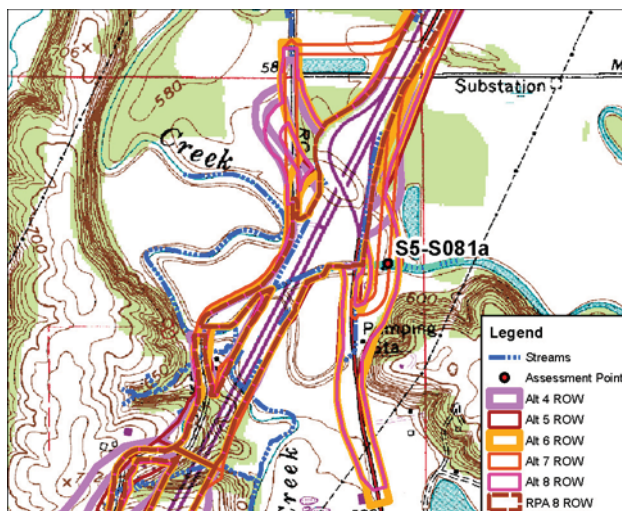
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

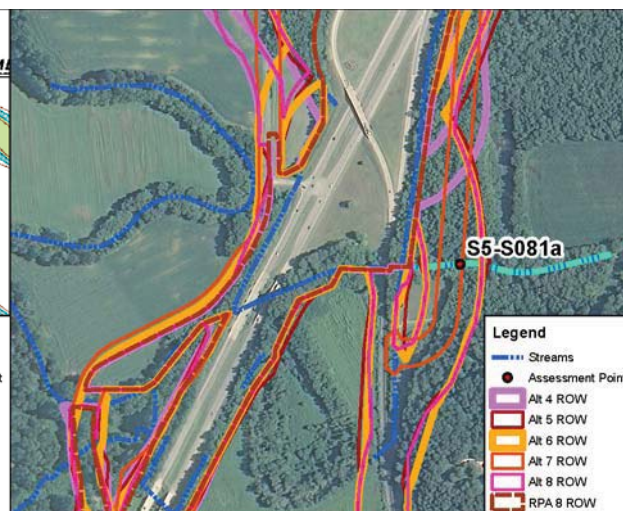
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S080 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S081a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 51.5
Legal Drain (Y/N): N
UTME: 1770816 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 64.0 feet
OHWM Depth: 16.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Hardpan

Stream S5-S081a – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.17
5	443	0.65	1.50
6	370	0.54	1.34
7	123	0.18	0.56
8	386	0.57	1.35
RPA 8	0	0.00	0.17

Description of Potential Impact:

Impacts to S5-S081a at this location for the Alternatives are listed in the table above. Segments S5-S081a and S5-S081b were evaluated together. Segment S5-S081b includes the bridge carrying old SR 37 over Beanblossom Creek while S5-S081a is the segment upstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and low sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its right bank and a narrow to wide riparian buffer along its left bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S081a segment are on the second page of this form. Implementation of the RPA 8 will decrease the amount of impacts to Beanblossom Creek at this location.

Stream Impacts S5-S081a



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
881ab		Beanblossom Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/24/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 51.5

1] SUBSTRATE Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P R	PRESENT	TOTAL %	P R	PRESENT	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	LIMESTONE [1]	<input checked="" type="checkbox"/>	HEAVY [-2]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	90	<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	SANDSTONE [0]	<input type="checkbox"/>	EXTENSIVE [-2]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input type="checkbox"/>	RIP/RAP [0]	<input checked="" type="checkbox"/>	MODERATE [-1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	LACUSTRINE [0]	<input type="checkbox"/>	NORMAL [0]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	COAL FINES [-2]		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Substrate Maximum 20

Comments

2] INSTREAM COVER Indicate presence 0 to 3 and estimate percent: 0—Absent; 1—Very small amounts or if more common of marginal quality; 2—Moderate amounts, but not of highest quality or in small amounts of highest quality; 3—Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	UNDERCUT BANKS [1]	% Amount	POOLS > 70cm [2]	% Amount	OXBOWS, BACKWATERS [1]
10	OVERHANGING VEGETATION [1]	10	ROOTWADS [1]		AQUATIC MACROPHYTES [1]
	SHALLOWS (IN SLOW WATER) [1]		BOULDERS [1]	5	LOGS OR WOODY DEBRIS [1]
35	ROOTMATS [1]				

Cover Maximum 20

Comments

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel Maximum 20

Comments

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE [1]	
L R		L R		L R		L R	
<input checked="" type="checkbox"/>	EROSION	<input checked="" type="checkbox"/>	WIDE > 50m [4]	<input checked="" type="checkbox"/>	FOREST, SWAMP [3]	<input type="checkbox"/>	URBAN OR INDUSTRIAL [0]
<input type="checkbox"/>	NONE/LITTLE [3]	<input type="checkbox"/>	MODERATE 10-50m [3]	<input type="checkbox"/>	SHRUB OR OLD FIELD [2]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
<input type="checkbox"/>	MODERATE [2]	<input checked="" type="checkbox"/>	NARROW 5-10m [2]	<input checked="" type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]		
<input type="checkbox"/>	HEAVY/SEVERE [1]	<input type="checkbox"/>	VERY NARROW [1]	<input type="checkbox"/>	FENCED PASTURE [1]		
		<input type="checkbox"/>	NONE [0]	<input type="checkbox"/>	OPEN PASTURE, ROWCROP [0]		

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10

Comments

5] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input checked="" type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERMITTENT [-1]	
		<input type="checkbox"/> EDDIES [1]	

Indicate for reach - pools and riffles.

Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ONE (Or 2 & average)	Check ONE (Or 2 & average)
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Riffle/Run Maximum 8

Comments

GRADIENT	DRAINAGE AREA	% POOL	% GLIDE	% RUN	% RIFFLE	Gradient Maximum
3 ft/mi	12.3 mi ²	10		90		10

OWW 64' x 16' (19.5m)

s81a.b

IDEM		OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)	
Sample #	bioSample #	Stream Name	Location
		Beanblossom	
Surveyor	Sample Date	County	Macro SampleType
			<input checked="" type="checkbox"/> Habitat Complete
			QHEI Score 51.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

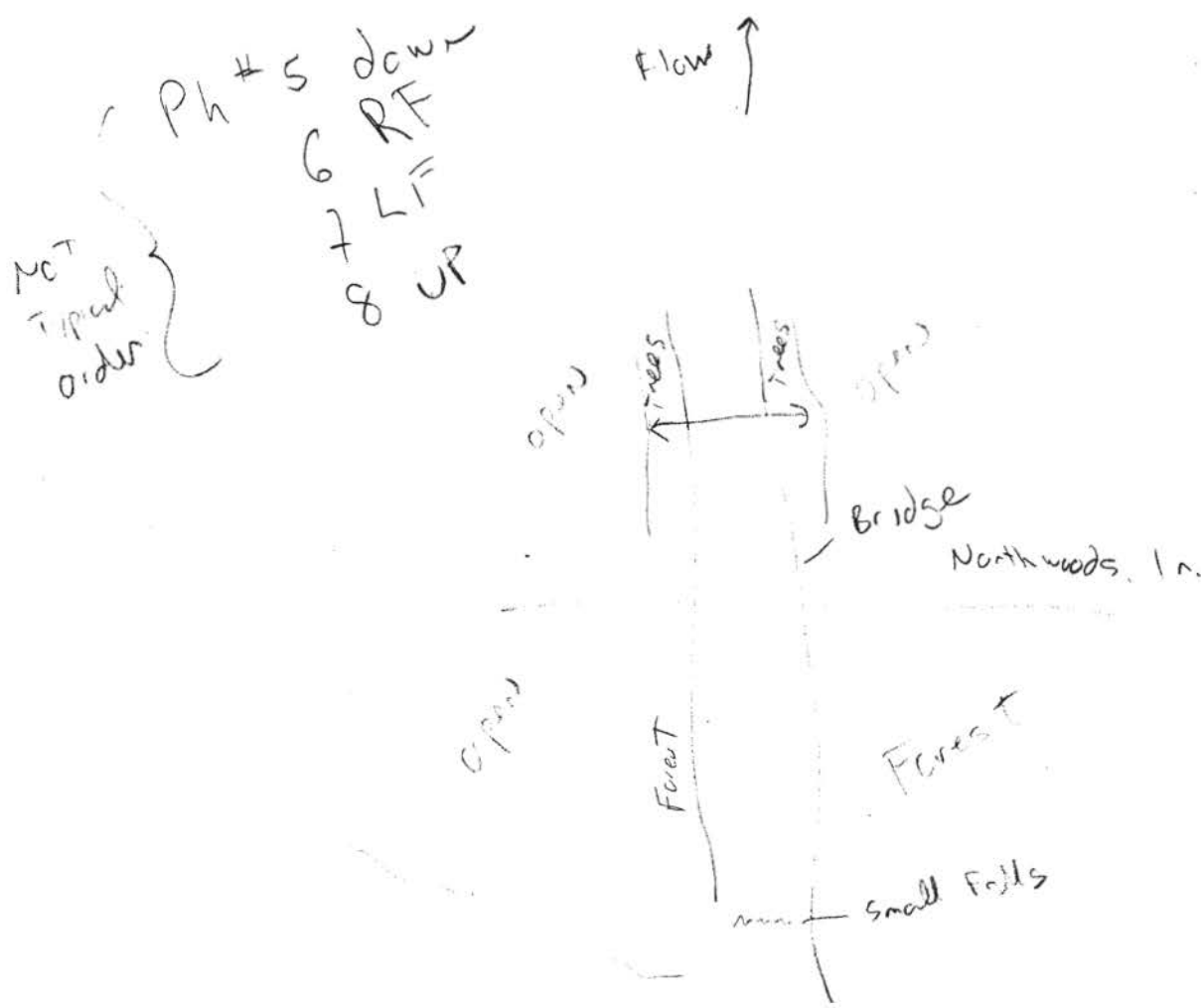
Pollution Impact Comments:

Miscellaneous QHEI Information

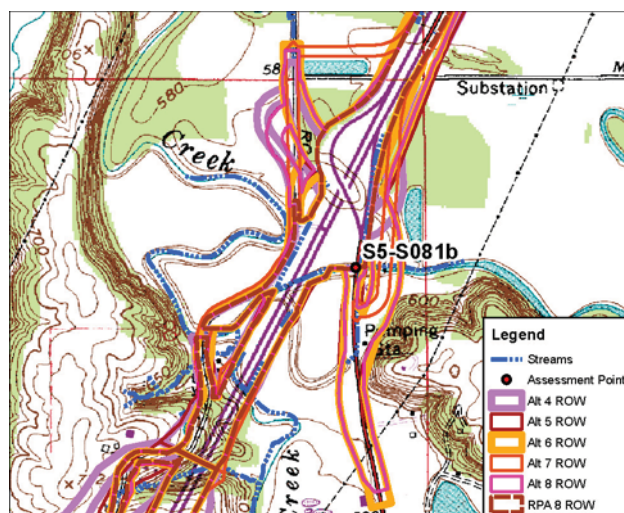
Subjective rating (1-10): 7 % Riffle: 90 Is reach representative of stream? Yes
Aesthetic rating (1-10): 7 % Run: 90
Canopy Cover (% Open): 50 % Pool: 10

General QHEI Notes

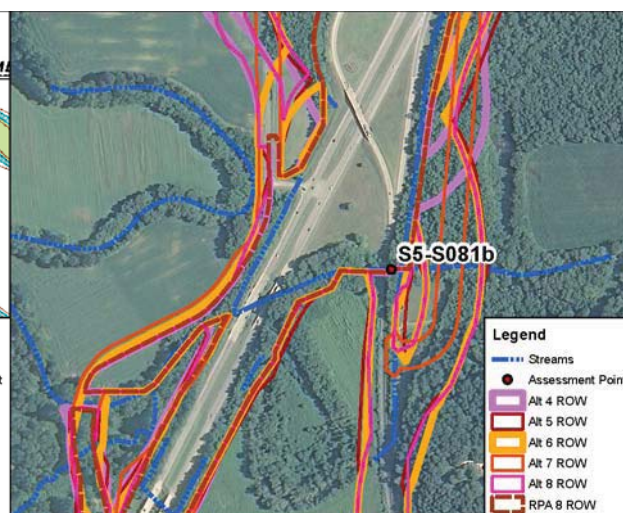
~ 400' reach Representative Sample



Stream Impacts S5_S081b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 51.5
Legal Drain (Y/N): N
UTME: 1770816 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 64.0 feet
OHWM Depth: 16.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Hardpan

Stream S5_S5_S081b – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	13	0.01	0.00
5	32	0.04	0.00
6	32	0.04	0.00
7	15	0.02	0.00
8	32	0.04	0.00
RPA 8	15	0.02	0.00

Description of Potential Impact:

Impacts to S5_S081b at this location for the Alternatives are listed in the table above. Segments S5_S081a and S5_S081b were evaluated together. Segment S5_S081b includes the bridge carrying old SR 37 over Beanblossom Creek while S5_S081a is the segment upstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and low sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its right bank and a narrow to wide riparian buffer along its left bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5_S081a segment are on the second page of this form. Implementation of RPA 8 will decrease the amount of impacts to Beanblossom Creek at this location.

Stream Impacts S5_S081b



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
881ab		Beanblossom Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/24/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 51.5

1] SUBSTRATE Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P R	PRESENT	TOTAL %	P R	PRESENT	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	LIMESTONE [1]	<input checked="" type="checkbox"/>	HEAVY [-2]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	90	<input type="checkbox"/>	TILLS [1]	<input type="checkbox"/>	MODERATE [-1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	WETLANDS [0]	<input type="checkbox"/>	NORMAL [0]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	HARDPAN [0]	<input type="checkbox"/>	FREE [1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	SANDSTONE [0]	<input type="checkbox"/>	EXTENSIVE [-2]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	10	<input type="checkbox"/>	RIP/RAP [0]	<input checked="" type="checkbox"/>	MODERATE [-1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	LACUSTRINE [0]	<input type="checkbox"/>	NORMAL [0]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	SHALE [-1]	<input type="checkbox"/>	NONE [1]
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	COAL FINES [-2]		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Substrate Maximum 20

Comments

2] INSTREAM COVER Indicate presence 0 to 3 and estimate percent: 0—Absent; 1—Very small amounts or if more common of marginal quality; 2—Moderate amounts, but not of highest quality or in small amounts of highest quality; 3—Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	UNDERCUT BANKS [1]	% Amount	POOLS > 70cm [2]	% Amount	OXBOWS, BACKWATERS [1]
10	OVERHANGING VEGETATION [1]	10	ROOTWADS [1]		AQUATIC MACROPHYTES [1]
	SHALLOWS (IN SLOW WATER) [1]		BOULDERS [1]	5	LOGS OR WOODY DEBRIS [1]
35	ROOTMATS [1]				

Cover Maximum 20

Comments

3] CHANNEL MORPHOLOGY Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input checked="" type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Channel Maximum 20

Comments

4] BANK EROSION AND RIPARIAN ZONE Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE [1]	
L R		L R		L R		L R	
<input checked="" type="checkbox"/>	NONE/LITTLE [3]	<input checked="" type="checkbox"/>	WIDE > 50m [4]	<input checked="" type="checkbox"/>	FOREST, SWAMP [3]	<input type="checkbox"/>	URBAN OR INDUSTRIAL [0]
<input type="checkbox"/>	MODERATE [2]	<input type="checkbox"/>	MODERATE 10-50m [3]	<input type="checkbox"/>	SHRUB OR OLD FIELD [2]	<input type="checkbox"/>	MINING / CONSTRUCTION [0]
<input type="checkbox"/>	HEAVY/SEVERE [1]	<input type="checkbox"/>	NARROW 5-10m [2]	<input checked="" type="checkbox"/>	RESIDENTIAL, PARK, NEW FIELD [1]		
		<input type="checkbox"/>	VERY NARROW [1]	<input type="checkbox"/>	FENCED PASTURE [1]		
		<input type="checkbox"/>	NONE [0]	<input type="checkbox"/>	OPEN PASTURE, ROWCROP [0]		

Indicate predominant land use(s) past 100m riparian.

Riparian Maximum 10

Comments

5] POOL/GLIDE AND RIFFLE/RUN QUALITY

MAXIMUM DEPTH		CHANNEL WIDTH		CURRENT VELOCITY		Recreation Potential	
Check ONE (ONLY!)		Check ONE (Or 2 & average)		Check ALL that apply		(Circle one and comment on back)	
<input checked="" type="checkbox"/>	> 1m [6]	<input checked="" type="checkbox"/>	POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/>	TORRENTIAL [-1]	<input type="checkbox"/>	Primary Contact
<input type="checkbox"/>	0.7 - < 1m [4]	<input type="checkbox"/>	POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/>	VERY FAST [1]	<input type="checkbox"/>	Secondary Contact
<input type="checkbox"/>	0.4 - < 0.7m [2]	<input type="checkbox"/>	POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/>	FAST [1]	<input type="checkbox"/>	
<input type="checkbox"/>	0.2 - < 0.4m [1]			<input checked="" type="checkbox"/>	MODERATE [1]	<input type="checkbox"/>	
<input type="checkbox"/>	< 0.2m [0]			<input type="checkbox"/>	SLOW [1]	<input type="checkbox"/>	
				<input type="checkbox"/>	INTERMITTENT [-1]	<input type="checkbox"/>	
				<input type="checkbox"/>	INTERMITTENT [-2]	<input type="checkbox"/>	
				<input type="checkbox"/>	EDDIES [1]	<input type="checkbox"/>	

Indicate for reach - pools and riffles.

Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH		RUN DEPTH		RIFFLE/RUN SUBSTRATE		RIFFLE/RUN EMBEDDEDNESS	
Check ONE (Or 2 & average)		Check ONE (Or 2 & average)		Check ONE (Or 2 & average)		Check ONE (Or 2 & average)	
<input type="checkbox"/>	BEST AREAS > 10cm [2]	<input type="checkbox"/>	MAXIMUM > 50cm [2]	<input type="checkbox"/>	STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/>	NONE [2]
<input type="checkbox"/>	BEST AREAS 5 - 10cm [1]	<input type="checkbox"/>	MAXIMUM < 50cm [1]	<input type="checkbox"/>	MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/>	LOW [1]
<input type="checkbox"/>	BEST AREAS < 5cm [metric = 0]			<input type="checkbox"/>	UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/>	MODERATE [0]
						<input type="checkbox"/>	EXTENSIVE [-1]

Riffle/Run Maximum 8

Comments

6] GRADIENT (3 ft/mi)		% POOL: 10		% GLIDE:		Gradient Maximum 10	
DRAINAGE AREA (12.3 mi ²)		MODERATE [6 - 10]		% RUN: 90		% RIFFLE:	
		HIGH - VERY HIGH [10 - 6]					

Gradient Maximum 10

04W 64' x 16' (19.5m)

s81a.b

IDEM		OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)	
Sample #	bioSample #	Stream Name	Location
		Beanblossom	
Surveyor	Sample Date	County	Macro Sample Type
			<input checked="" type="checkbox"/> Habitat Complete
			QHEI Score 51.5

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

Pollution Impact Comments:

Miscellaneous QHEI Information

Subjective rating (1-10): % Riffle: Is reach representative of stream? Yes

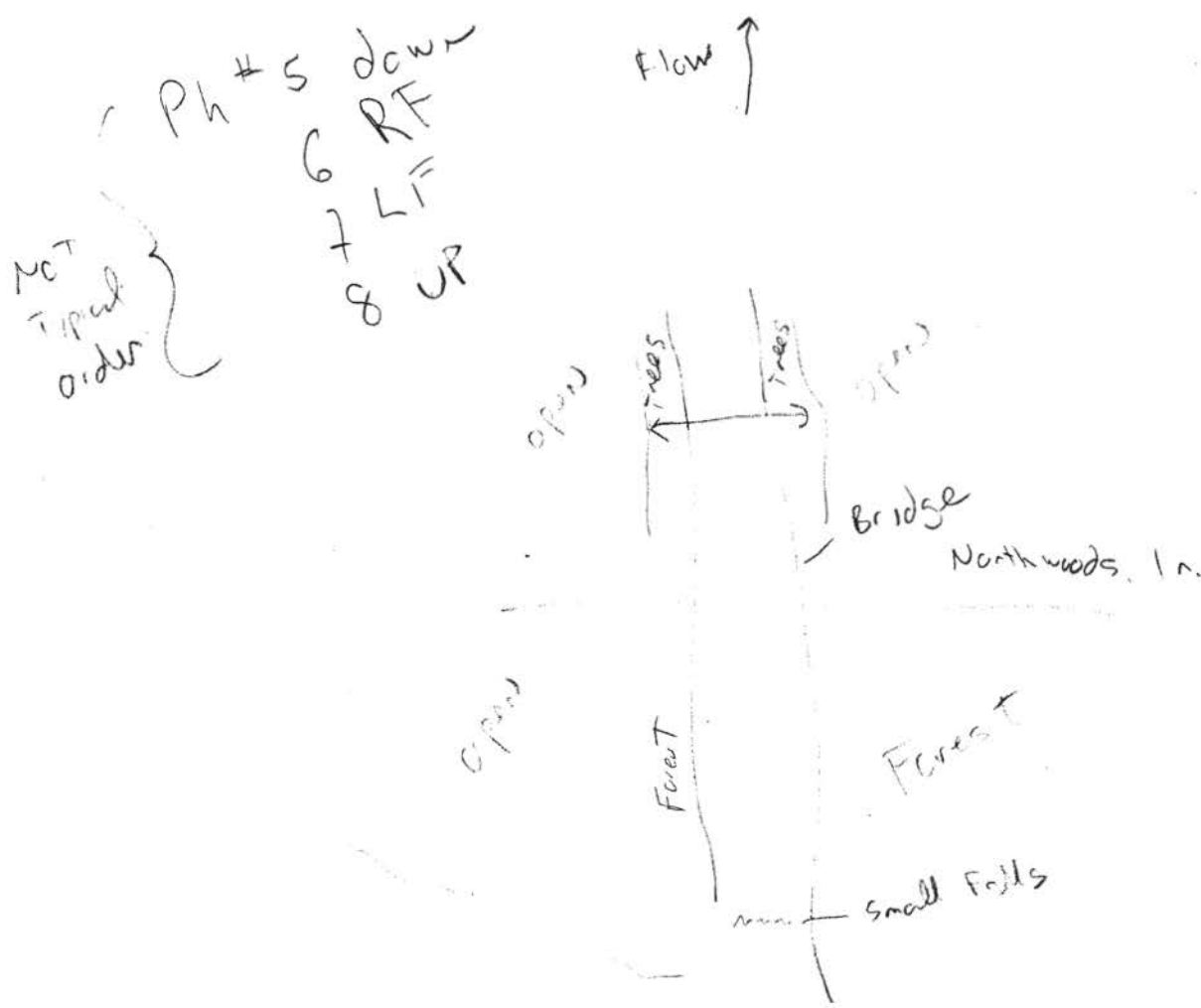
Aesthetic rating (1-10): 7 % Run: 90

Canopy Cover (% Open): 50 % Glide:

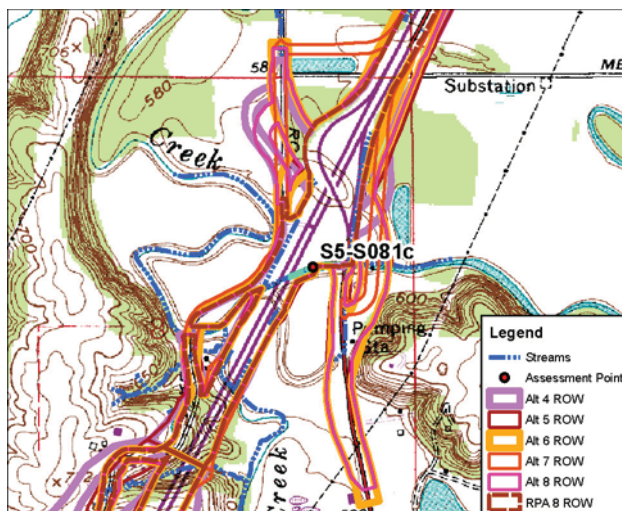
% Pool: 10

General QHEI Notes

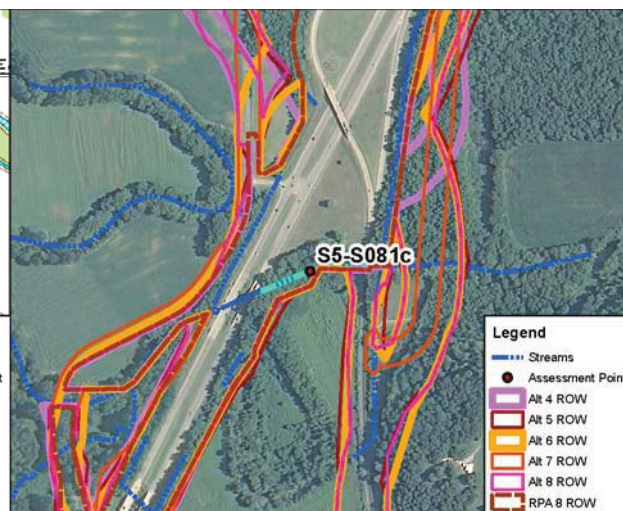
~ 400' reach Representative Sample



Stream Impacts S5_S081c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 34.75
Legal Drain (Y/N): N
UTME: 1770143 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 64.0 feet
OHWM Depth: 16.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Silt/detritus

Stream S5_S081c – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	575	0.69	1.11
5	575	0.69	1.31
6	575	0.69	1.24
7	575	0.69	1.11
8	575	0.69	1.23
RPA 8	575	0.69	1.11

Description of Potential Impact:

Impacts to S5_S081c at this location for the Alternatives are listed in the table above. Stream segments S5_S081c, S5_S081d, and S5_S081e were evaluated together. These segments are recovering from channelization due to historic agricultural practices. Segment S5_S081c is the portion upstream from the existing bridge carrying SR 37 over Beanblossom Creek, S5_S081d is the bridge portion, and S5_S081e is the portion located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt and detritus. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5_S081c segment are on the second page of this form. All of the Alternatives possess similar impacts at this location.

Stream Impacts S5_S081c



Photograph Taken Upstream



Photograph Taken Downstream

See 581c, d, e

OWB Biological Studies QHE (Qualitative Habitat Evaluation Index)

Sample # bloSample # Stream Name Beanblossom Creek Location SR 37 Xing
 Surveyor RW Sample Date 6/29/2005 County Monroe Macro Sample Type Habitat Complete QHEI Score: 34.75

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> <input type="checkbox"/> Bldrs/Slabs(10)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Hardpan(4)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Boulders(9)	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Detritus(3)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Cobble(8)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Muck(2)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Gravel(7)	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Silt(2)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Sand(6)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Sludge(1)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Bedrock(5)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Artificial(0)	<input type="checkbox"/> <input type="checkbox"/>

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin

<input type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input checked="" type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)
Silt Cover		
<input checked="" type="checkbox"/> Silt heavy(-2)	<input checked="" type="checkbox"/> Extensive(-2)	
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)	
<input type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Low/Normal(0)	
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)	

NOTE: ignore sludge originating from point sources; score based on natural substrates

☒ >4 substrates present(2)

Comments: 0.5-2.5

2-Instream Cover (20 points maximum)

Instream Cover Score: 8

Type (check ALL that apply)

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)	<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)	<input type="checkbox"/> Moderate 25-75% (7)
<input checked="" type="checkbox"/> Shallow(slow water)(1)	<input checked="" type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)	<input checked="" type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Rock(s)(1)	Comments: <u></u>		<input type="checkbox"/> Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 7

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input checked="" type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments: <u>appears channelized - very uniform</u>				<input type="checkbox"/> One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6.75

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width	Erosion/Runoff-Floodplain quality (past 100 ft Riparian)	Bank Erosion
L R (per bank)	L R (most predominant per bank)	L R (per bank)
<input checked="" type="checkbox"/> Wide >50m (4)	<input checked="" type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/> None or little (3)
<input type="checkbox"/> Moderate 10-50m (3)	<input type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/> Moderate (2)
<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> Residential, Park, New field (1)	<input checked="" type="checkbox"/> Heavy/Severe (1)
<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> Fenced pasture (1)	<input type="checkbox"/> Open Pasture/Rowcrop (0)
<input type="checkbox"/> None (0)	Comments: <u>1.5</u>	

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 8

Max pool depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle current velocity (check all that apply)
<input checked="" type="checkbox"/> >1m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1m (4)	<input checked="" type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4m (1)		<input checked="" type="checkbox"/> Slow (1)
<input type="checkbox"/> <0.2m (pool=0)	Comments: <u></u>	<input type="checkbox"/> Torrential (-1)
		<input type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> No pool (0)

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable-e.g. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input type="checkbox"/> Mod. stable-e.g. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable-e.g. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)	Comments: <u></u>	<input type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 12m

Gradient: 0 (ft/mile)

Drainage Area: 12.4 (square miles)

Comments:

NHWM 52' v 18'

Sample #	bioSample #	Stream Name	Location
581c de		beanblossom creek	CSR37
Surveyor	Sample Date	County	Macro Sample Type
		Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

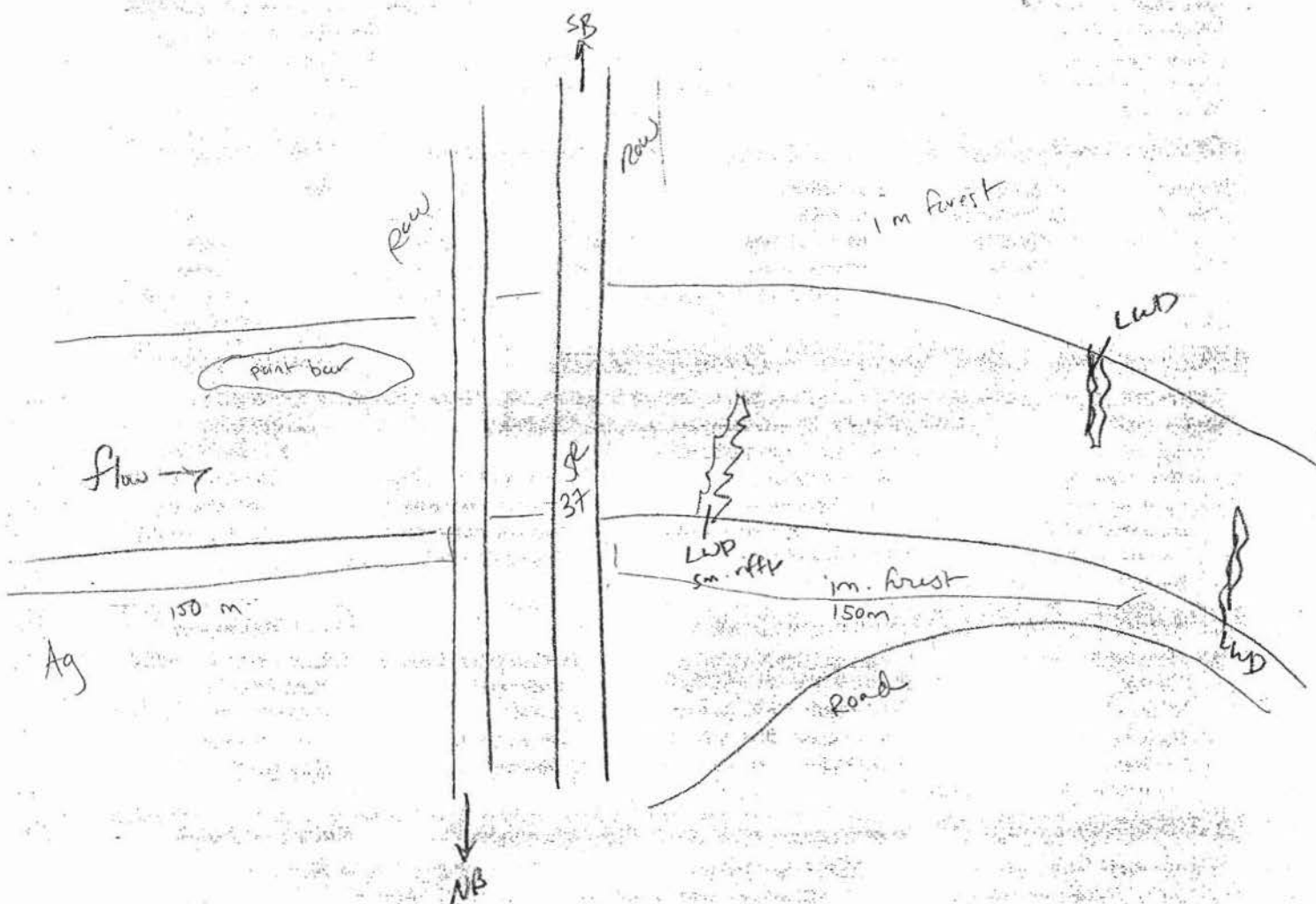
Pollution Impact Comments:

Miscellaneous QHEI Information

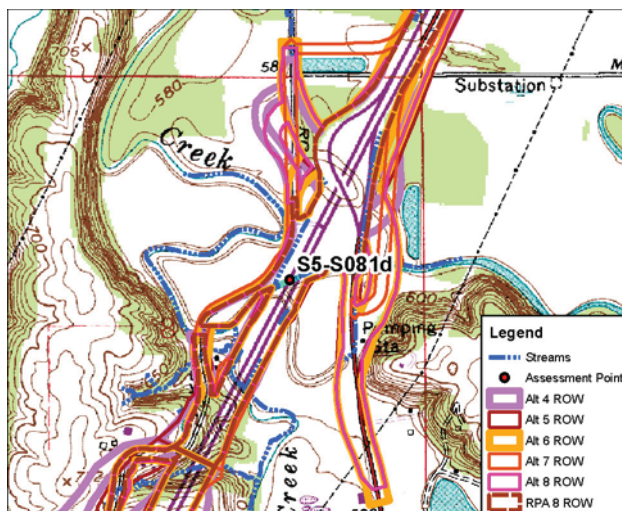
Subjective rating (1-10): % Riffle: Is reach representative of stream?
 Aesthetic rating (1-10): % Run:
 Canopy Cover (% Open): % Glide:
 % Pool:

General QHEI Notes:

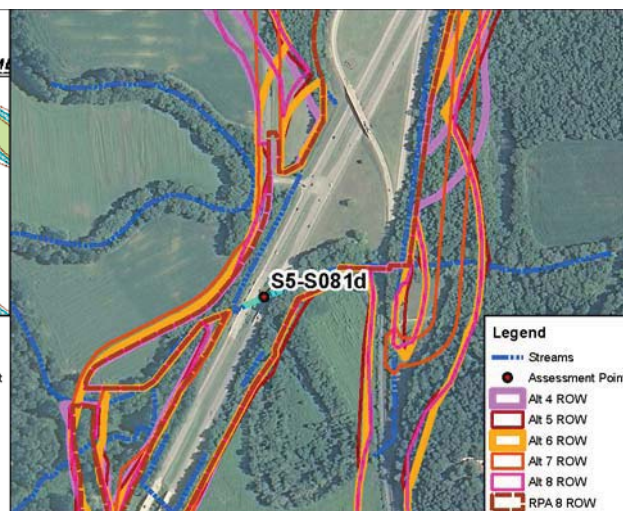
Very homogeneous substrate + morphology



Stream Impacts S5_S081d



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 34.75
Legal Drain (Y/N): N
UTME: 1770143 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 64.0 feet
OHWM Depth: 16.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Silt/detritus

Stream S5_S081d – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	207	0.25	0.26
5	207	0.25	0.26
6	207	0.25	0.26
7	207	0.25	0.26
8	207	0.25	0.26
RPA 8	207	0.25	0.26

Description of Potential Impact:

Impacts to S5_S081d at this location for the Alternatives are listed in the table above. Segments S5_S081c, S5_S081d, and S5_S081e were evaluated together. These segments are recovering from channelization due to historic agricultural practices. Segment S5_S081c is the portion upstream from the existing bridge carrying SR 37 over Beanblossom Creek, S5_S081d is the bridge portion, and S5_S081e is the portion located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt and detritus. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5_S081c segment are on the second page of this form. All of the Alternatives possess similar impacts at this location.

Stream Impacts S5_S081d



Photograph Taken Upstream



Photograph Taken Downstream

See 581c, d, e

OWB Biological Studies QHE (Qualitative Habitat Evaluation Index)

Sample # bloSample # Stream Name Beanblossom Creek Location SR 37 Xing
 Surveyor RW Sample Date 6/29/2005 County Monroe Macro Sample Type Habitat Complete QHEI Score: 34.75

1-Substrate (20 points maximum)

Substrate Score: 3

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> <input type="checkbox"/> Bldrs/Slabs(10)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Hardpan(4)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Boulders(9)	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Detritus(3)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Cobble(8)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Muck(2)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Gravel(7)	<input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Silt(2)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Sand(6)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Sludge(1)	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> Bedrock(5)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> Artificial(0)	<input type="checkbox"/> <input type="checkbox"/>

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin

<input type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input checked="" type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)
Silt Cover		
<input checked="" type="checkbox"/> Silt heavy(-2)	<input checked="" type="checkbox"/> Extensive(-2)	
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)	
<input type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Low/Normal(0)	
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)	

NOTE: ignore sludge originating from point sources; score based on natural substrates

☒ >4 substrates present(2)

Comments: 0.5-2.5

2-Instream Cover (20 points maximum)

Instream Cover Score: 8

Type (check ALL that apply)

<input type="checkbox"/> Undercut banks(1)	<input checked="" type="checkbox"/> Deep pools(2)	<input type="checkbox"/> Oxbows(1)
<input type="checkbox"/> Overhanging vegetation(1)	<input type="checkbox"/> Rootwads(1)	<input type="checkbox"/> Aquatic macrophytes(1)
<input checked="" type="checkbox"/> Shallows/in slow water(1)	<input checked="" type="checkbox"/> Boulders(1)	<input checked="" type="checkbox"/> Logs and woody debris(1)
<input type="checkbox"/> Rockpiles(1)	Comments: <u></u>	

Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input checked="" type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 7

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input checked="" type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments: <u>appears channelized - very uniform</u>				<input type="checkbox"/> One side channel modifications

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6.75

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width	Erosion/Runoff-Floodplain quality (past 100 ft Riparian)	Bank Erosion
L R (per bank)	L R (most predominant per bank)	L R (per bank)
<input checked="" type="checkbox"/> <input type="checkbox"/> Wide >50m (4)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/> <input type="checkbox"/> Conservation Tillage (1)
<input type="checkbox"/> <input checked="" type="checkbox"/> Moderate 10-50m (3)	<input type="checkbox"/> <input type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/> <input type="checkbox"/> Urban or Industrial (0)
<input type="checkbox"/> <input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> <input type="checkbox"/> Residential, Park, New field (1)	<input type="checkbox"/> <input type="checkbox"/> Mining, Construction (0)
<input type="checkbox"/> <input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> <input type="checkbox"/> Fenced pasture (1)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Open Pasture/Rowcrop (0)
<input type="checkbox"/> <input type="checkbox"/> None (0)	Comments: <u>1.5</u>	

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 8

Max pool depth (check one)

- ☒ >1m (6)
☐ 0.7-1m (4)
☐ 0.4-0.7m (2)
☐ 0.2-0.4m (1)
☐ <0.2m (pool=0)

Morphology (check only one, OR check two and AVERAGE)

- ☐ Pool width > riffle width (2)
☒ Pool width = riffle width (1)
☐ Pool width < riffle width (0)

Pool/Run/Riffle current velocity (check all that apply)

- ☐ Eddies (1)
☐ Fast (1)
☐ Moderate (1)
☒ Slow (1)
☐ Torrential (-1)
☐ Interstitial (-1)
☐ Intermittent (-2)
☐ No pool (0)

Comments:

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/run depth (check one)

- ☐ Generally >10cm, Max >50cm (4)
☐ Generally >10cm, Max <50cm (3)
☐ Generally 5-10cm (1)
☒ Generally <5cm (riffle=0)

Riffle/run substrate

- ☐ Stable-e.g. cobble, boulder (2)
☐ Mod. stable-e.g. pea gravel (1)
☒ Unstable-e.g. sand, gravel (0)

Riffle/run embeddedness

- ☐ Extensive (-1)
☐ Moderate (0)
☒ No riffle (0)
☐ Normal/Low (1)
☐ None (2)

Comments:

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 12m

Gradient: 0 (ft/mile)

Drainage Area: 12.4 (square miles)

Comments:

NHWM 52' v 18'

Sample #	bioSample #	Stream Name	Location
581c de		beanblossom creek	CSR37
Surveyor	Sample Date	County	Macro Sample Type
		Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

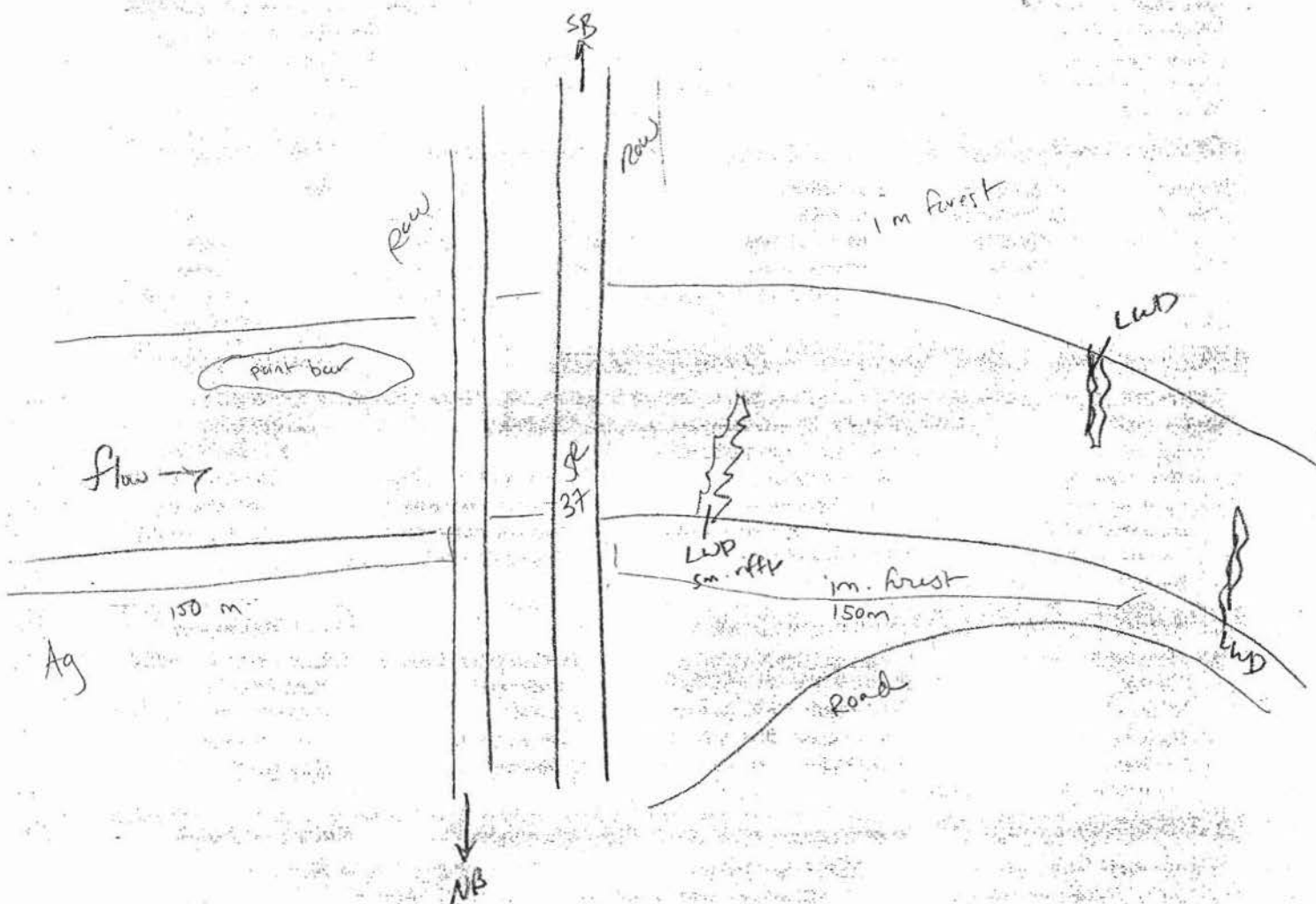
Pollution Impact Comments:

Miscellaneous QHEI Information

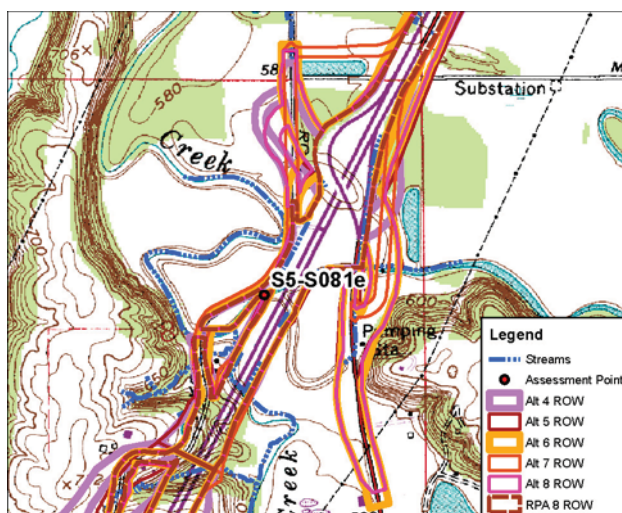
Subjective rating (1-10): % Riffle: Is reach representative of stream?
 Aesthetic rating (1-10): % Run:
 Canopy Cover (% Open): % Glide:
 % Pool:

General QHEI Notes:

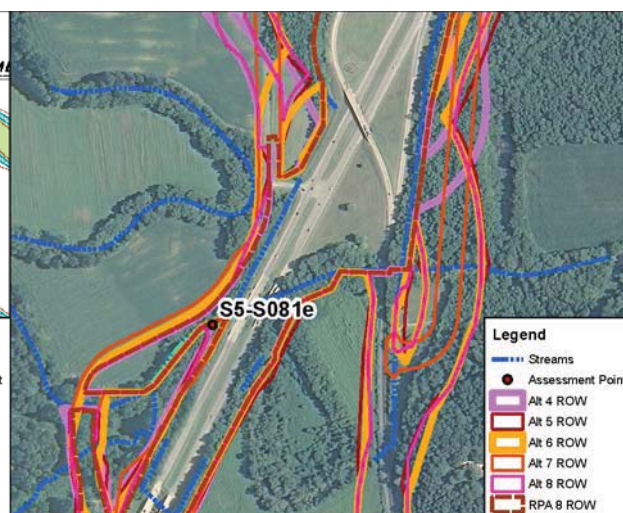
Very homogeneous substrate + morphology



Stream Impacts S5_S081e



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: Yes
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 34.75
Legal Drain (Y/N): N
UTME: 1770143 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 64.0 feet
OHWM Depth: 16.0 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Silt/detritus

Stream S5_S081e – Modified Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	539	0.64	0.92
5	559	0.67	0.93
6	444	0.53	0.71
7	437	0.52	0.69
8	569	0.68	0.88
RPA 8	453	0.54	0.71

Description of Potential Impact:

Impacts to S5_S081e at this location for the Alternatives are listed in the table above. Segments S5_S081c, S5_S081d, and S5_S081e were evaluated together. These segments are recovering from channelization due to historic agricultural practices. Segment S5_S081c is the portion upstream from the existing bridge carrying SR 37 over Beanblossom Creek, S5_S081d is the bridge portion, and S5_S081e is the portion located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and no sinuosity where the Alternatives cross this stream. The predominant substrate consists of silt and detritus. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5_S081c segment are on the second page of this form. All of the Alternatives possess similar impacts at this location.

Stream Impacts S5_S081e



Photograph Taken Upstream



Photograph Taken Downstream

OWQ Biological Studies QHE (Qualitative Habitat Evaluation Index)

Sample #	bloSample #	Stream Name	Beanblossom Creek	Location	SR 37 Xing
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Surveyor	Sample Date	County	Macro Sample Type	<input checked="" type="checkbox"/> Habitat Complete
Klu	6/29/2005	Monroe		

QHEI Score: 34.75

1-Substrate (20 points maximum)

Substrate Score:

Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present

P=Pool, R=Riffle

Predominant		Present		Predominant		Present	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	Bldrs/Slabs(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hardpan(4)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Boulders(9)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Detritus(3)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Cobble(8)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Muck(2)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Gravel(7)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Silt(2)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Sand(6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sludge(1)	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	Bedrock(5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Artificial(0)	<input type="checkbox"/>

Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin

<input type="checkbox"/> Limestone(1)	<input type="checkbox"/> Hardpan(0)	<input type="checkbox"/> Lacustrine(0)
<input type="checkbox"/> Tills(1)	<input type="checkbox"/> Sandstone(0)	<input type="checkbox"/> Shale(-1)
<input type="checkbox"/> Wetlands(0)	<input checked="" type="checkbox"/> Rip/Rap(0)	<input type="checkbox"/> Coal fines(-2)

<u>Silt Cover</u>	<u>Embeddedness</u>
<input checked="" type="checkbox"/> Silt heavy(-2)	<input checked="" type="checkbox"/> Extensive(-2)
<input type="checkbox"/> Silt moderate(-1)	<input type="checkbox"/> Moderate(-1)
<input type="checkbox"/> Silt normal(0)	<input type="checkbox"/> Low/Normal(0)
<input type="checkbox"/> Silt free(1)	<input type="checkbox"/> None(1)

NOTE: ignore sludge originating from point sources; score based on natural substrates

☒ >4 substrates present(2)

Comments:

2-Instream Cover (20 points maximum)

Instream Cover Score:

Type (check ALL that apply)

Amount (check only 1, or 2 and AVERAGE)

☐ Undercut banks(1) ☒ Deep pools(2) ☐ Oxbows(1)
☐ Overhanging vegetation(1) ☐ Rootwads(1) ☐ Aquatic macrophytes(1)
☒ Shallows in slow water(1) ☒ Boulders(1) ☒ Logs and woody debris(1)
☐ Reefs(1) Comments:

☐ Extensive >75% (11)
☐ Moderate 25-75% (7)
☒ Sparse 5-25% (3)
☐ Nearly absent <5% (1)

3-Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score:

<u>Sinuosity</u>	<u>Development</u>	<u>Channelization</u>	<u>Stability</u>	<u>Modifications/Other</u>	
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging	<input type="checkbox"/> Impound
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation	<input type="checkbox"/> Islands
<input type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input checked="" type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy Removal	<input type="checkbox"/> Leveed
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging	<input type="checkbox"/> Bank shaping

Common appears charalised - very uniform

4-Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 6.75

Left/Right banks looking downstream (For each category, check only one per bank, OR two per bank and AVERAGE).

Riparian width		Erosion/Runoff-Floodplain quality (past 100 ft Riparian)				Bank Erosion	
L	R (per bank)	L	R (most predominant per bank)	L	R	L	R (per bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/> Wide >50m (4)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Forest, Swamp (3)	<input type="checkbox"/>	<input type="checkbox"/> Conservation Tillage (1)	<input type="checkbox"/>	<input type="checkbox"/> None or little (3)
<input type="checkbox"/>	<input checked="" type="checkbox"/> Moderate 10-50m (3)	<input type="checkbox"/>	<input type="checkbox"/> Shrub or Old field (2)	<input type="checkbox"/>	<input type="checkbox"/> Urban or Industrial (0)	<input type="checkbox"/>	<input type="checkbox"/> Moderate (2)
<input type="checkbox"/>	<input checked="" type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/>	<input type="checkbox"/> Residential, Park, New field (1)	<input type="checkbox"/>	<input type="checkbox"/> Mining, Construction (0)	<input checked="" type="checkbox"/>	<input type="checkbox"/> Heavy/Severe (1)
<input type="checkbox"/>	<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/>	<input type="checkbox"/> Fenced pasture (1)	<input type="checkbox"/>	<input checked="" type="checkbox"/> Open Pasture/Rowcrop (0)		
<input type="checkbox"/>	<input type="checkbox"/> None (0)	Comments: <input type="text"/>					

5a-Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 8

<u>Max pool depth (check one)</u> <input checked="" type="checkbox"/> >1m (6) <input type="checkbox"/> 0.7-1m (4) <input type="checkbox"/> 0.4-0.7m (2) <input type="checkbox"/> 0.2-0.4m (1) <input type="checkbox"/> <0.2m (pool=0)	<u>Morphology (check only one, OR check two and AVERAGE)</u> <input type="checkbox"/> Pool width > riffle width (2) <input checked="" type="checkbox"/> Pool width = riffle width (1) <input type="checkbox"/> Pool width < riffle width (0)	<u>Pool/Run/Riffle current velocity (check all that apply)</u> <input type="checkbox"/> Eddies (1) <input type="checkbox"/> Fast (1) <input type="checkbox"/> Moderate (1) <input checked="" type="checkbox"/> Slow (1) <input type="checkbox"/> Torrential (-1) <input type="checkbox"/> Interstitial (-1) <input type="checkbox"/> Intermittent (-2) <input type="checkbox"/> No pool (0)
Comments:		

5b-Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: ☐

Riffle/run depth (check one)	Riffle/run substrate	Riffle/run embeddedness
<input type="checkbox"/> Generally >10cm, Max >50cm (4)	<input type="checkbox"/> Stable-e.g. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1) <input type="checkbox"/> Normal/Low (1)
<input type="checkbox"/> Generally >10cm, Max <50cm (3)	<input type="checkbox"/> Mod. stable-e.g. pea gravel (1)	<input type="checkbox"/> Moderate (0) <input type="checkbox"/> None (2)
<input type="checkbox"/> Generally 5-10cm (1)	<input checked="" type="checkbox"/> Unstable-e.g. sand, gravel (0)	<input checked="" type="checkbox"/> No riffle (0)
<input checked="" type="checkbox"/> Generally <5cm (riffle=0)	Comments:	

6-Gradient (10 points maximum)

Gradient Score: 2

Average width: 2.2 Gradient: 0 (ft/mile) Drainage Area: 2.4 (square miles)

Comments

OHWM 52' x 18'

Sample #	bioSample #	Stream Name	Location
581c de		beanblossom creek	CSR37
Surveyor	Sample Date	County	Macro Sample Type
		Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

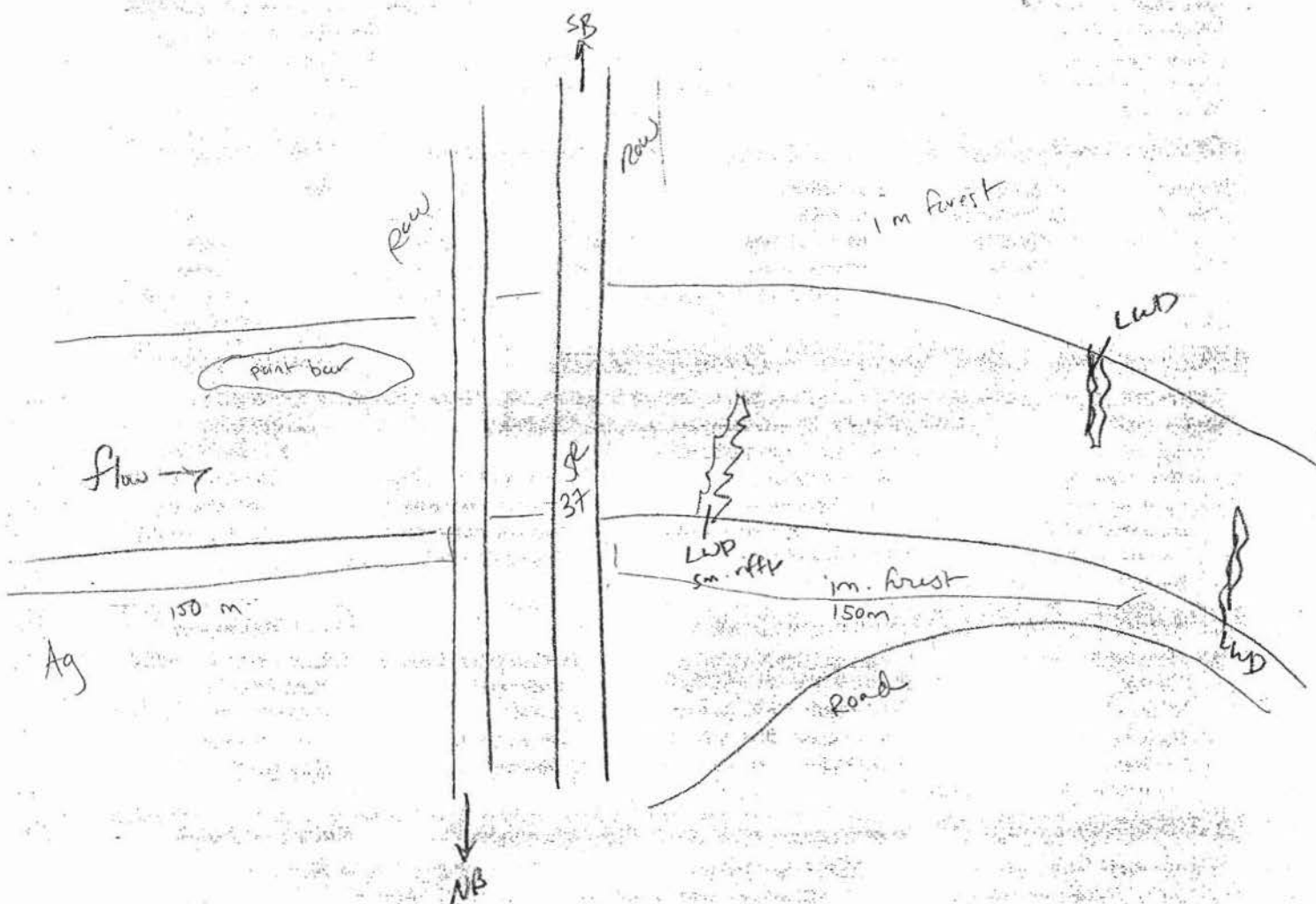
Pollution Impact Comments:

Miscellaneous QHEI Information

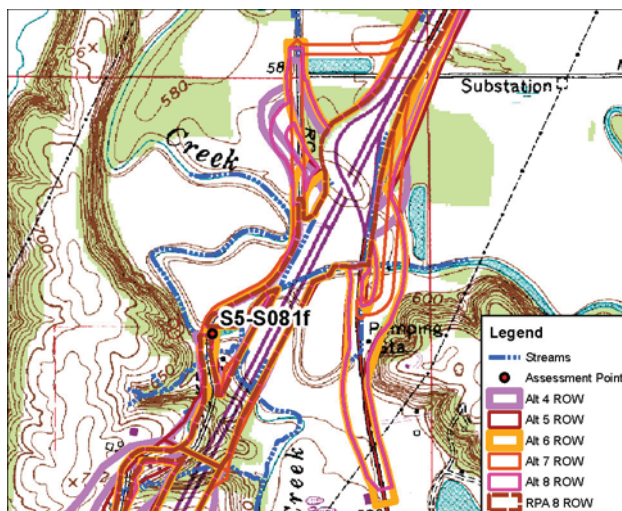
Subjective rating (1-10): % Riffle: Is reach representative of stream?
 Aesthetic rating (1-10): % Run:
 Canopy Cover (% Open): % Glide:
 % Pool:

General QHEI Notes:

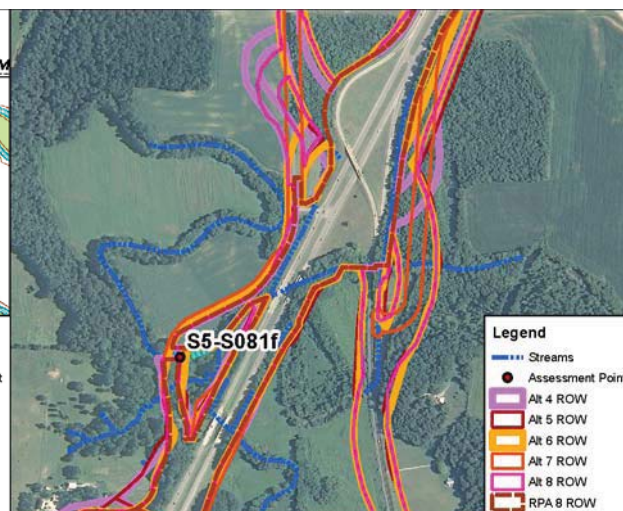
Very homogeneous substrate + morphology



Stream Impacts S5-S081f



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 48
Legal Drain (Y/N): N
UTME: 1768864 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 45.0 feet
OHWM Depth: 18.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Hardpan

Stream S5-S081f – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	59	0.06	0.51
5	67	0.07	0.47
6	162	0.17	0.62
7	128	0.13	0.51
8	67	0.07	0.44
RPA 8	67	0.07	0.41

Description of Potential Impact:

Impacts to S5-S081f at this location for the Alternatives are listed in the table above. Segment S5-S081f is the portion from the mouth of Griffy Creek to the North Kinser Pike bridge, while segment S5-S081g is the North Kinser Road bridged portion and S5-S081g is located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and moderate sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5-S081f segment are on the second page of this form. Implementation of RPA 8 will decrease the amount of impacts at this location.

Stream Impacts S5-S081f



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
581f, g, h		Beanblossom Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/24/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 48

1] **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Score natural substrates; ignore sludge from point-sources)						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

2] **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	Amount	% Amount	Amount	% Amount	Amount	% Amount	Amount
	UNDERCUT BANKS [1]	20	2	POOLS > 70cm [2]			
	OVERHANGING VEGETATION [1]	5	1	ROOTWADS [1]			
	SHALLOWS (IN SLOW WATER) [1]			BOULDERS [1]	5	1	
10	1	ROOTMATS [1]					

Comments

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indicate predominant land use(s) past 100m riparian.							

Comments

5] **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input checked="" type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> EDDIES [1]	
Indicate for reach - pools and riffles.			Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]
			Riffle/Run Maximum 8

Comments

6] GRADIENT (3 ft/mi)	% POOL	% GLIDE	Gradient Maximum
<input type="checkbox"/> VERY LOW - LOW [2-4]	30		10
<input checked="" type="checkbox"/> MODERATE [6-10]			
<input type="checkbox"/> HIGH - VERY HIGH [10-6]			
DRAINAGE AREA (12.4 mi ²)	% RUN	% RIFFLE	
	70		

OHW 45' x 18.5' (13.7m)

581 f g, h



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Beanblossom	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

Pollution Impact Comments:

Miscellaneous QHEI Information

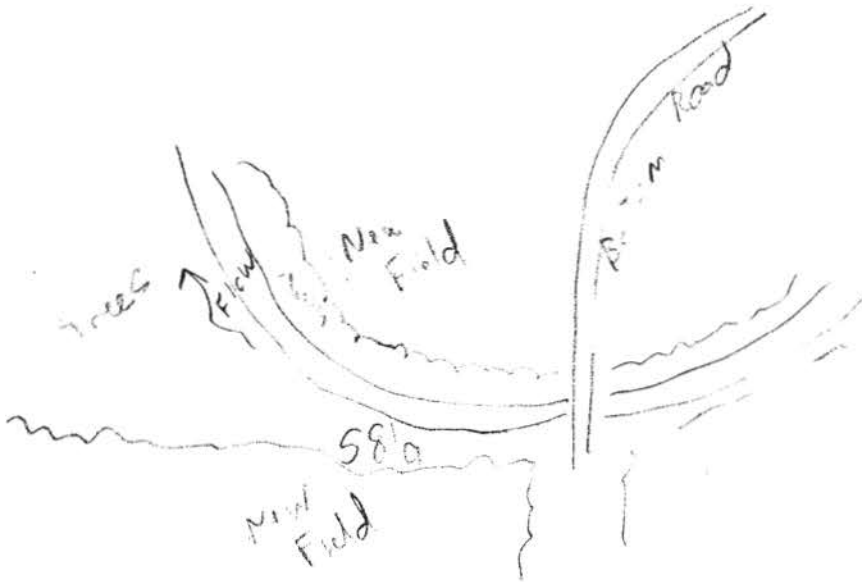
Subjective rating (1-10): % Riffle: Is reach representative of stream?

Aesthetic rating (1-10): % Run:

Canopy Cover (% Open): % Glide:

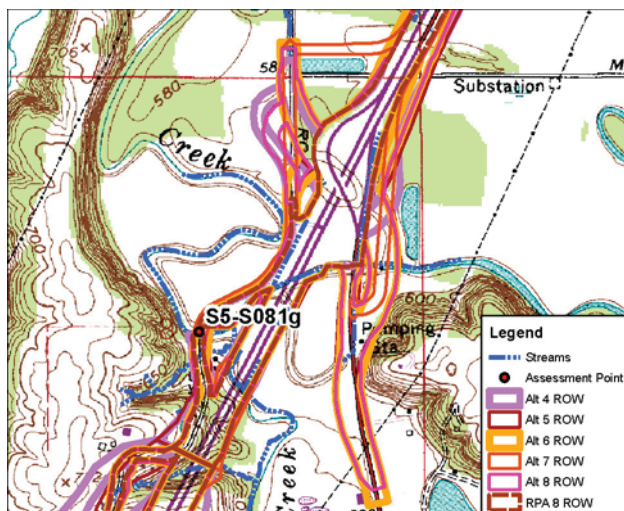
% Pool:

General QHEI Notes

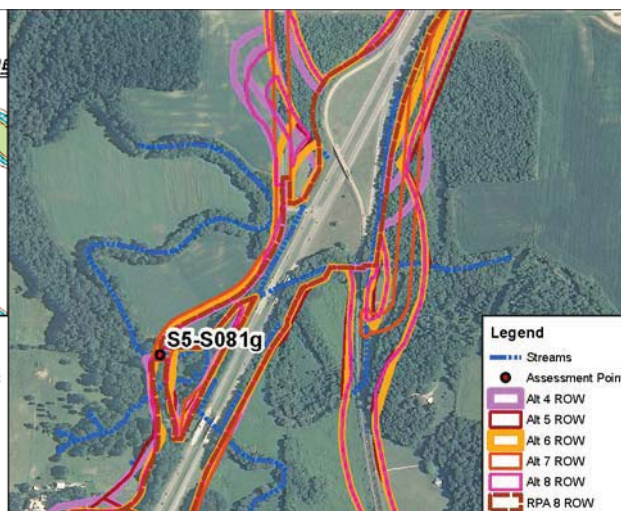


Ph 37-up
38-down
39 LF
40 RF

Stream Impacts S5-S081g



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 48
Legal Drain (Y/N): N
UTME: 1768864 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 45.0 feet
OHWM Depth: 18.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Hardpan

Stream S5-S081g – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.01
5	0	0.00	0.01
6	33	0.03	0.01
7	33	0.03	0.02
8	0	0.00	0.01
RPA 8	0	0.00	0.01

Description of Potential Impact:

Impacts to S5-S081g at this location for the Alternatives are listed in the table above. Segment S5-S081f is the portion from the mouth of Griffy Creek to the North Kinser Pike bridge, while segment S5-S081g is the North Kinser Road bridged portion and S5-S081g is located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and moderate sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5-S081f segment are on the second page of this form. Implementation of Alternative 6 or Alternative 7 will decrease the amount of impacts at this location.

Stream Impacts S5-S081g



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
581f, g, h		Beanblossom Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/24/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 48

1] **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]						(Score natural substrates; ignore sludge from point-sources)			

Comments

2] **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	Amount	% Amount	Amount	% Amount	Amount
<input type="checkbox"/>	UNDERCUT BANKS [1]	<input type="checkbox"/>	POOLS > 70cm [2]	<input type="checkbox"/>	OXBOWS, BACKWATERS [1]
<input type="checkbox"/>	OVERHANGING VEGETATION [1]	<input type="checkbox"/>	ROOTWADS [1]	<input type="checkbox"/>	AQUATIC MACROPHYTES [1]
<input type="checkbox"/>	SHALLOWS (IN SLOW WATER) [1]	<input type="checkbox"/>	BOULDERS [1]	<input type="checkbox"/>	LOGS OR WOODY DEBRIS [1]
<input type="checkbox"/>	ROOTMATS [1]				

Comments

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

5] **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input checked="" type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> INTERMITTENT [-2]	
		<input type="checkbox"/> EDDIES [1]	

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]

Comments

6] GRADIENT (3 ft/mi)	% POOL	% GLIDE	Gradient Maximum
<input type="checkbox"/> VERY LOW - LOW [2-4]	30		10
<input checked="" type="checkbox"/> MODERATE [6-10]			
<input type="checkbox"/> HIGH - VERY HIGH [10-6]			

DRAINAGE AREA (12.4 mi²)

% RUN: 70

% RIFFLE: 70

Maximum 10

OHW 45' x 18.5' (13.7m)

581 f g, h



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Beanblossom	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

Pollution Impact Comments:

Miscellaneous QHEI Information

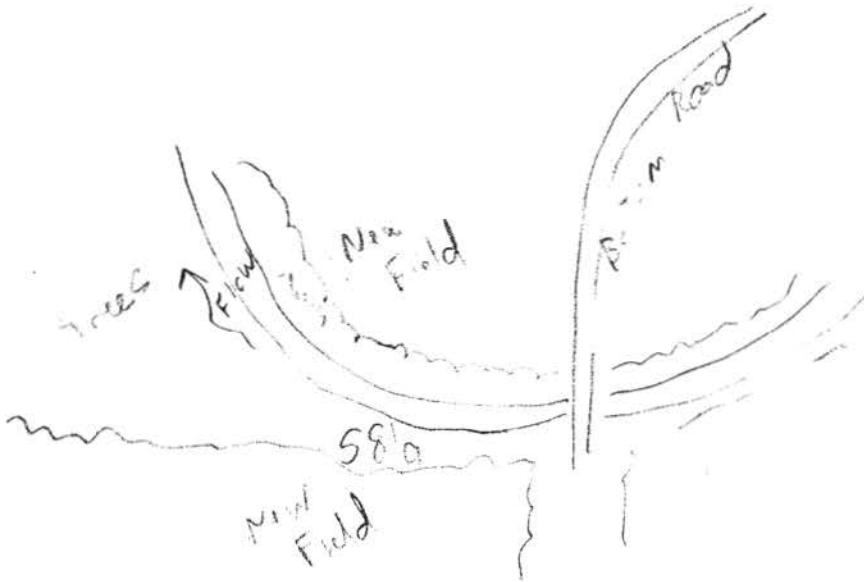
Subjective rating (1-10): % Riffle: Is reach representative of stream?

Aesthetic rating (1-10): % Run:

Canopy Cover (% Open): % Glide:

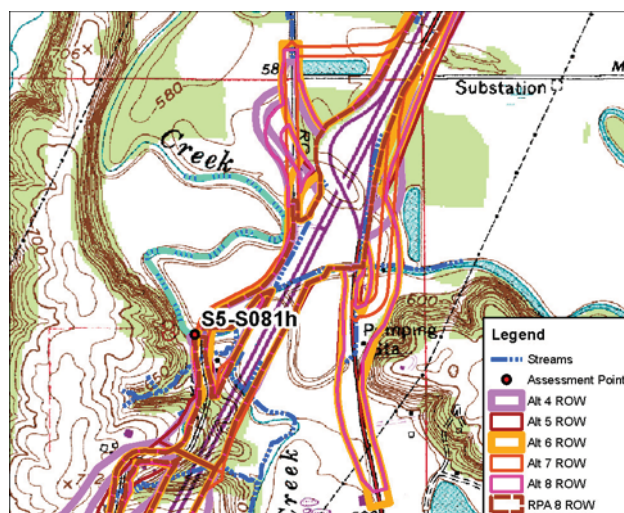
% Pool:

General QHEI Notes

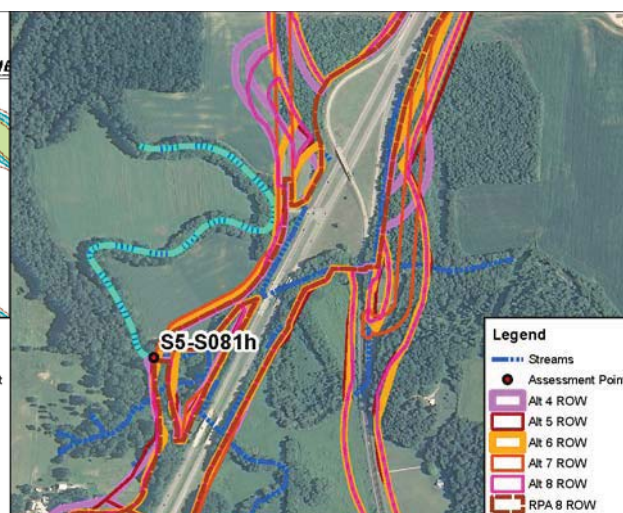


Ph 37 - up
38 - down
39 LF
40 RF

Stream Impacts S5-S081h



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Beanblossom Creek
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized: No
Stream Type: Perennial
Evaluation Type: QHEI
Evaluation Score: 48
Legal Drain (Y/N): N
UTME: 1768864 ft
UTMN: 14246629 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: Yes
OHWM Width: 45.0 feet
OHWM Depth: 18.5 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 42.73 sq mi
Predominant Sub: Hardpan

Stream S5-S081h – Warm Water Habitat			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.20
5	0	0.00	0.26
6	13	0.01	0.40
7	45	0.05	0.47
8	0	0.00	0.19
RPA 8	0	0.00	0.09

Description of Potential Impact:

Impacts to S5-S081h at this location for the Alternatives are listed in the table above. Segment S5-S081f is the portion from the mouth of Griffy Creek to the North Kinser Pike bridge, while segment S5-S081g is the North Kinser Road bridged portion and S5-S081h is located downstream from the bridge. At the time of evaluation, this stream is a perennial stream with poor habitat development and moderate sinuosity where the Alternatives cross this stream. Hardpan is the predominant substrate. The stream has a wide riparian corridor associated with its left bank and a moderately wide riparian buffer along its right bank. The adjacent floodplain is dominated by forest land. Photographs taken upstream and downstream at the S5-S081f segment are on the second page of this form. Implementation of Alternative 6 will decrease the amount of impacts at this location.

Stream Impacts S5-S081h



Photograph Taken Upstream



Photograph Taken Downstream



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
581f, g, h		Beanblossom Creek	
Surveyor	Sample Date	County	Macro Sample Type
KSS	4/24/12	Monroe	
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 48

1] **SUBSTRATE** Check ONLY Two predominant substrate TYPE BOXES; estimate % and check every type present

Check ONE (Or 2 & average)

BEST TYPES			OTHER TYPES			ORIGIN		QUALITY	
P	R	TOTAL %	P	R	TOTAL %				
<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(Score natural substrates; ignore sludge from point-sources)						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NUMBER OF BEST TYPES: <input type="checkbox"/> 4 or more [2] <input checked="" type="checkbox"/> 3 or less [0]						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

2] **INSTREAM COVER** Indicate presence 0 to 3 and estimate percent: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed root wad in deep/fast water, or deep, well-defined, functional pools.)

% Amount	Amount	% Amount	Amount	% Amount	Amount	% Amount	Amount
	UNDERCUT BANKS [1]	20	2	POOLS > 70cm [2]			
	OVERHANGING VEGETATION [1]	5	1	ROOTWADS [1]			
	SHALLOWS (IN SLOW WATER) [1]			BOULDERS [1]	5	1	
10	1	ROOTMATS [1]					

Comments

3] **CHANNEL MORPHOLOGY** Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
<input type="checkbox"/> HIGH [4]	<input type="checkbox"/> EXCELLENT [7]	<input checked="" type="checkbox"/> NONE [6]	<input type="checkbox"/> HIGH [3]
<input checked="" type="checkbox"/> MODERATE [3]	<input type="checkbox"/> GOOD [5]	<input type="checkbox"/> RECOVERED [4]	<input checked="" type="checkbox"/> MODERATE [2]
<input type="checkbox"/> LOW [2]	<input type="checkbox"/> FAIR [3]	<input type="checkbox"/> RECOVERING [3]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> NONE [1]	<input checked="" type="checkbox"/> POOR [1]	<input type="checkbox"/> RECENT OR NO RECOVERY [1]	

Comments

4] **BANK EROSION AND RIPARIAN ZONE** Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream		RIPARIAN WIDTH		FLOOD PLAIN QUALITY		CONSERVATION TILLAGE	
L	R	L	R	L	R	L	R
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indicate predominant land use(s) past 100m riparian.							

Comments

5] **POOL/GLIDE AND RIFFLE/RUN QUALITY**

MAXIMUM DEPTH	CHANNEL WIDTH	CURRENT VELOCITY	Recreation Potential
Check ONE (ONLY!)	Check ONE (Or 2 & average)	Check ALL that apply	(Circle one and comment on back)
<input type="checkbox"/> > 1m [6]	<input checked="" type="checkbox"/> POOL WIDTH > RIFFLE WIDTH [2]	<input type="checkbox"/> TORRENTIAL [-1]	<input type="checkbox"/> Primary Contact
<input checked="" type="checkbox"/> 0.7 - < 1m [4]	<input type="checkbox"/> POOL WIDTH = RIFFLE WIDTH [1]	<input type="checkbox"/> VERY FAST [1]	<input type="checkbox"/> Secondary Contact
<input type="checkbox"/> 0.4 - < 0.7m [2]	<input type="checkbox"/> POOL WIDTH < RIFFLE WIDTH [0]	<input type="checkbox"/> FAST [1]	
<input type="checkbox"/> 0.2 - < 0.4m [1]		<input checked="" type="checkbox"/> MODERATE [1]	
<input type="checkbox"/> < 0.2m [0]		<input type="checkbox"/> EDDIES [1]	
Indicate for reach - pools and riffles.			Pool/Current Maximum 12

Comments

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species:

RIFFLE DEPTH	RUN DEPTH	RIFFLE/RUN SUBSTRATE	RIFFLE/RUN EMBEDDEDNESS
<input type="checkbox"/> BEST AREAS > 10cm [2]	<input type="checkbox"/> MAXIMUM > 50cm [2]	<input type="checkbox"/> STABLE (e.g., Cobble, Boulder) [2]	<input type="checkbox"/> NONE [2]
<input type="checkbox"/> BEST AREAS 5 - 10cm [1]	<input type="checkbox"/> MAXIMUM < 50cm [1]	<input type="checkbox"/> MOD. STABLE (e.g., Large Gravel) [1]	<input type="checkbox"/> LOW [1]
<input type="checkbox"/> BEST AREAS < 5cm [metric = 0]		<input type="checkbox"/> UNSTABLE (e.g., Fine Gravel, Sand) [0]	<input type="checkbox"/> MODERATE [0]
			<input type="checkbox"/> EXTENSIVE [-1]
			Riffle/Run Maximum 8

Comments

6] GRADIENT (3 ft/mi)	% POOL	% GLIDE	Gradient Maximum
<input type="checkbox"/> VERY LOW - LOW [2-4]	30		10
<input checked="" type="checkbox"/> MODERATE [6-10]			
<input type="checkbox"/> HIGH - VERY HIGH [10-6]			
DRAINAGE AREA (12.4 mi ²)	% RUN	% RIFFLE	
	70		

OHW 45' x 18.5' (13.7m)

581 f g, h



OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Beanblossom	
Surveyor	Sample Date	County	Macro Sample Type
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score <input type="text"/>

Impacts/Miscellaneous

Major Suspected Impacts (Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Suburban |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration |
| <input type="checkbox"/> Livestock | <input type="checkbox"/> CSOs |
| <input type="checkbox"/> Silviculture | <input type="checkbox"/> Mining |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural |

Pollution Impact Comments:

Miscellaneous QHEI Information

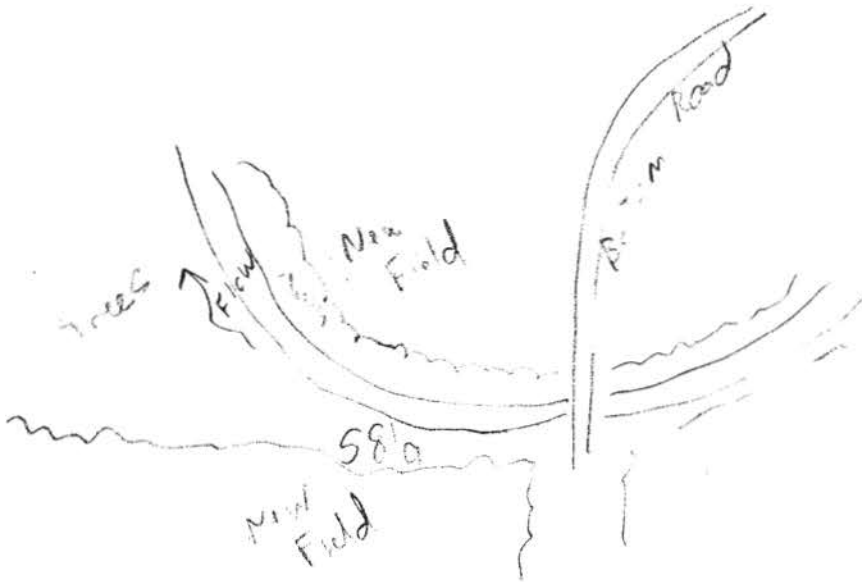
Subjective rating (1-10): % Riffle: Is reach representative of stream?

Aesthetic rating (1-10): % Run:

Canopy Cover (% Open): % Glide:

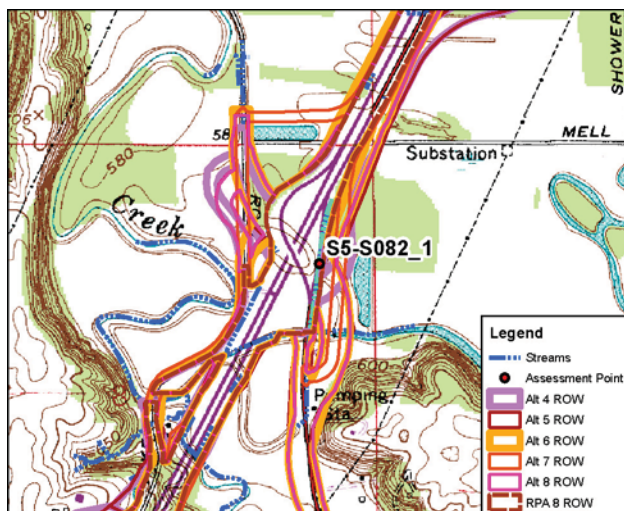
% Pool:

General QHEI Notes

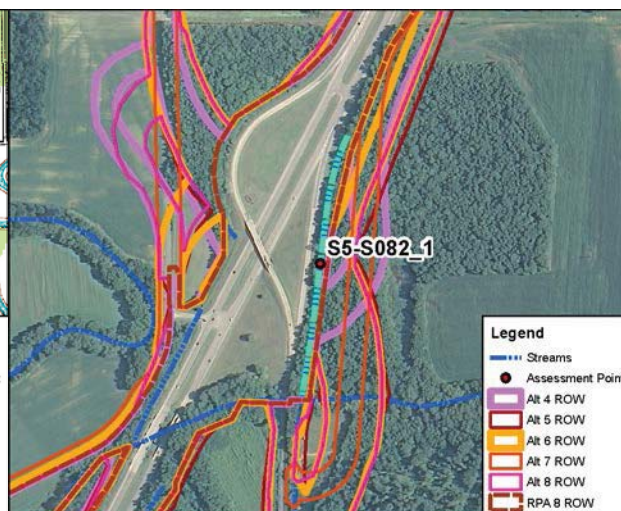


Ph 37-up
38-down
39 LF
40 RF

Stream Impacts S5-S082_1



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib Beanblossom Ck
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Roadside Ditch
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 46
Legal Drain (Y/N): N
UTME: 1770608 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 4.0 feet
OHWM Depth: 0.6 feet
USCOE Jurisdiction: No
IDEM Jurisdiction: No
Watershed Area: 0.02 sq mi
Predominant Sub: Muck

Stream S5-S082_1 – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	1400	0.13	1.75
5	1404	0.13	2.65
6	1404	0.13	2.23
7	1399	0.13	1.18
8	1404	0.13	2.65
RPA 8	1399	0.13	1.08

Description of Potential Impact:

Impacts to S5-S082_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located within existing INDOT ROW. Its substrate is mostly muck with some scattered leaf pack. This ditch flows directly into Beanblossom Creek. The ditch is located within existing INDOT ROW. There is a narrow riparian buffer along the right bank and a wide forested floodplain along the left bank. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S082_1 are on the second page of this form.



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

46

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S082_1

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200

LAT. 39.23368

LONG.

RIVER CODE

RIVER MILE

DATE 04/24/12

SCORER KSS

COMMENTS (Long: -86.54021) (Roadside Ditch-Modified Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	15%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	25%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input checked="" type="checkbox"/> MUCK [0 pts]	60%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI Metric Points

Substrate Max = 40

6

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 13

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 4'/0.6'

AVERAGE BANKFULL WIDTH (meters): 1.22

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: <input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text" value="0.00"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

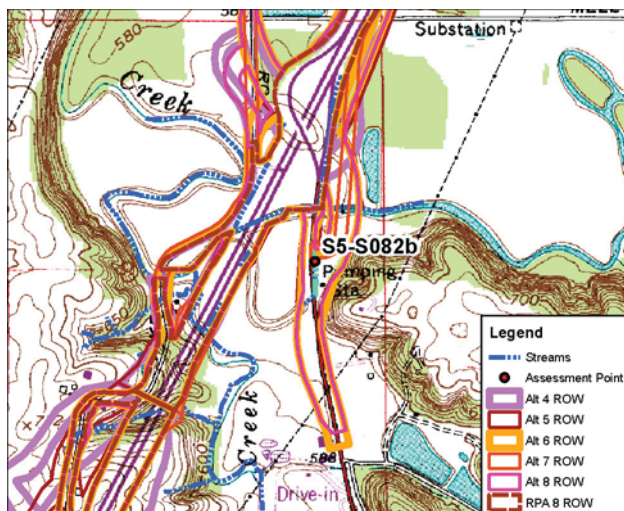
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

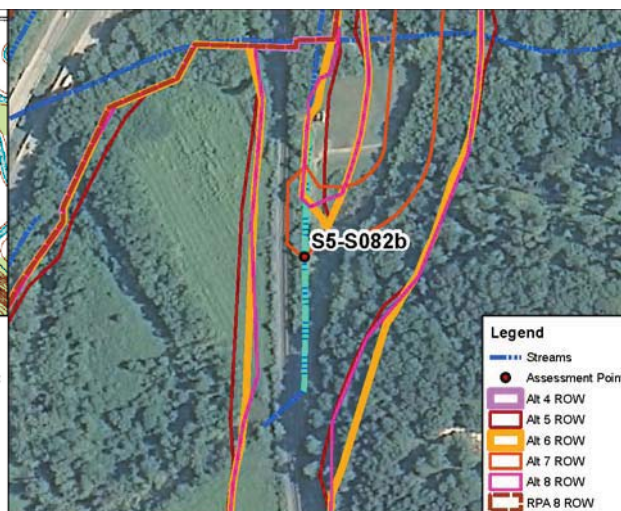
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S082_1 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S082b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	8
Quarter:	NE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	2.0 feet
Channelized/Type:	Yes/Roadside Ditch	OHWM Depth:	0.4 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	43	Watershed Area:	0.04 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Clay
UTME: 1770475 ft	UTMN: 14246768 ft		

Stream S5-S082b – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	671	0.03	0.03
6	493	0.02	0.03
7	232	0.01	0.00
8	482	0.02	0.03
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S082b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located within existing INDOT ROW. This ditch flows to S5-S082d via pipe and then into Beanblossom Creek. There is a narrow riparian corridor associated with this ditch. The floodplain consists of urban roadways on both banks. Photographs taken upstream and downstream in the area where the Alternatives cross S5-S082b are on the second page of this form.

Stream Impacts S5-S082b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

43

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S082b

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200

LAT. 39.23021

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54071) (Roadside Ditch-Modified Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☒ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	80%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	3%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00% (A)

Substrate Percentage Check 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

8

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

30

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 25

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.0' / 0.4'

AVERAGE BANKFULL WIDTH (meters): 0.75

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input checked="" type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
--	---	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

Comments Regarding Biology:

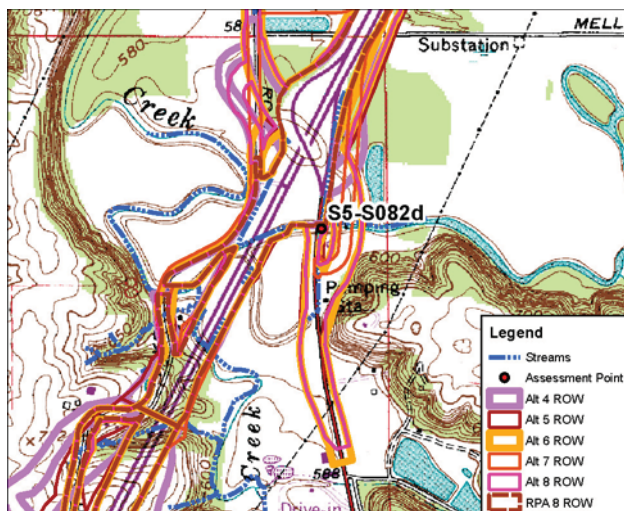
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

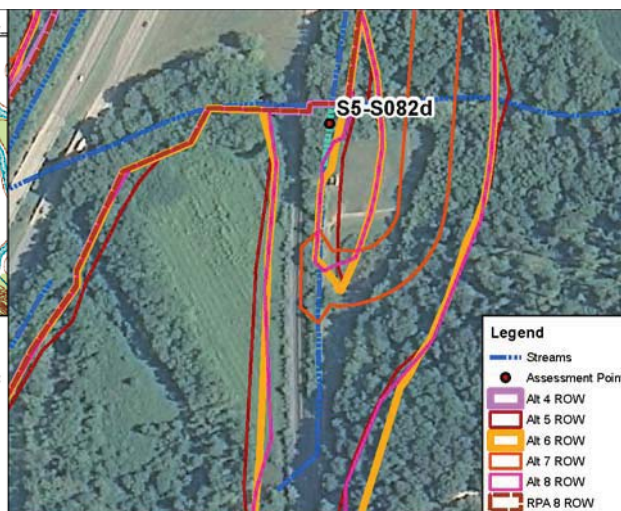
FLOW →

See Stream Assessment Form
S5-S082b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S082d



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib Beanblossom Ck
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Roadside Ditch
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 43
Legal Drain (Y/N): N
UTME: 1770505 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 2.0 feet
OHWM Depth: 0.4 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Clay

Stream S5-S082d – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	156	0.01	0.01
6	156	0.01	0.01
7	0	0.00	0.00
8	136	0.01	0.01
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S082d for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located within existing INDOT ROW. This ditch flows directly into Beanblossom Creek. There is a narrow riparian corridor associated with this ditch. The floodplain consists of urban roadways on both banks. Photographs taken upstream and downstream in the area where the Alternatives cross S5-S082d are on the second page of this form.

Stream Impacts S5-S082d



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

43

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S082d

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 150

LAT. 39.23159

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54059) (Roadside Ditch-Modified Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☒ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	80%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	2%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	3%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

8

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input checked="" type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

30

COMMENTS MAXIMUM POOL DEPTH (centimeters): 25

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.0' / 0.4' AVERAGE BANKFULL WIDTH (meters): 0.75

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

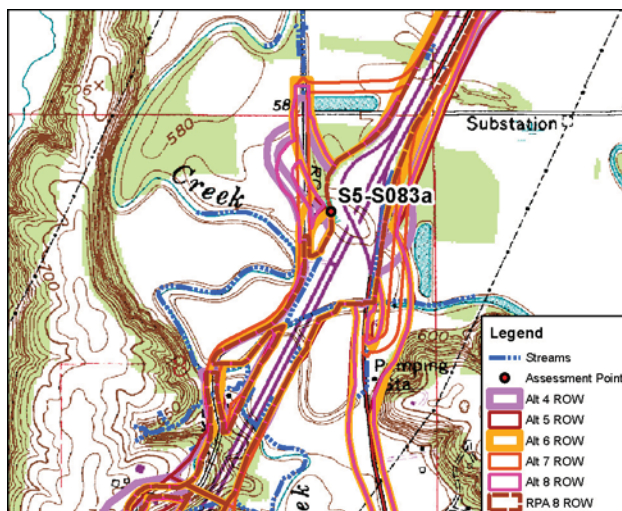
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

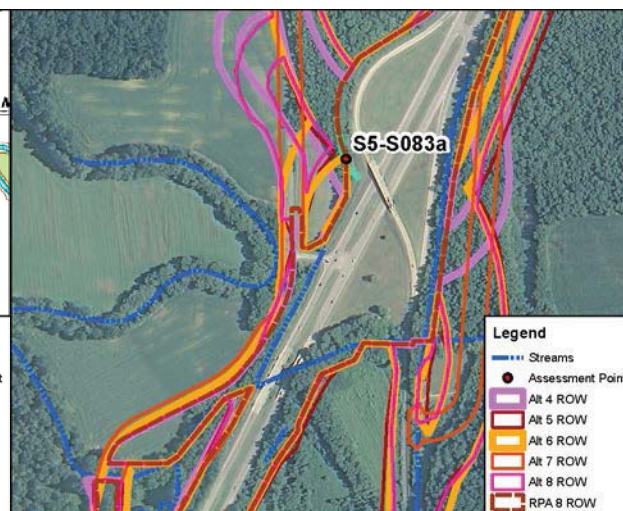
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S082d for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S083a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	8
Quarter:	NE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	6.0 feet
Channelized/Type:	Yes/Natural	OHWM Depth:	0.4 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	30	Watershed Area:	0.02 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Muck
UTME: 1770103 ft	UTMN: 14248270 ft		

Stream S5-S083a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	262	0.04	0.97
5	262	0.04	0.96
6	262	0.04	0.81
7	136	0.02	0.44
8	262	0.04	0.96
RPA 8	136	0.02	0.44

Description of Potential Impact:

Impacts to S5-S083a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate of S5-S083a is predominantly muck and leaf pack. There is a moderately-wide riparian corridor on both banks of the stream. The adjacent floodplain consists of agricultural land on the right and maintained INDOT ROW on the left. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S083a are on the second page of this form.

Stream Impacts S5-S083a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

30

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S083a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200

LAT. 39.23434

LONG.

RIVER CODE

RIVER MILE

DATE 04/24/12

SCORER KSS

COMMENTS (Long: -86.54199) (Natural - Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	20%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input checked="" type="checkbox"/> MUCK [0 pts]	80%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

3

TOTAL NUMBER OF SUBSTRATE TYPES:

2

HHEI Metric Points

Substrate Max = 40

5

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters):

4

Pool Depth Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 6'/0.4'

AVERAGE BANKFULL WIDTH (meters):

1.83

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Beanblossom Creek	Distance from Evaluated Stream	0.41
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/19/12** Quantity: **0.20**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **45%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

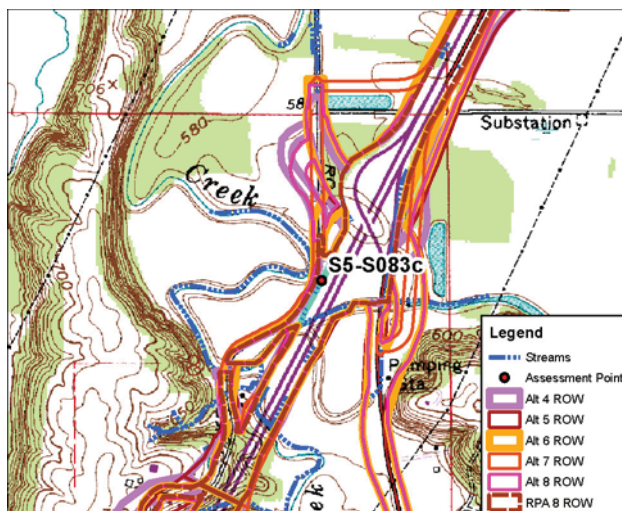
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

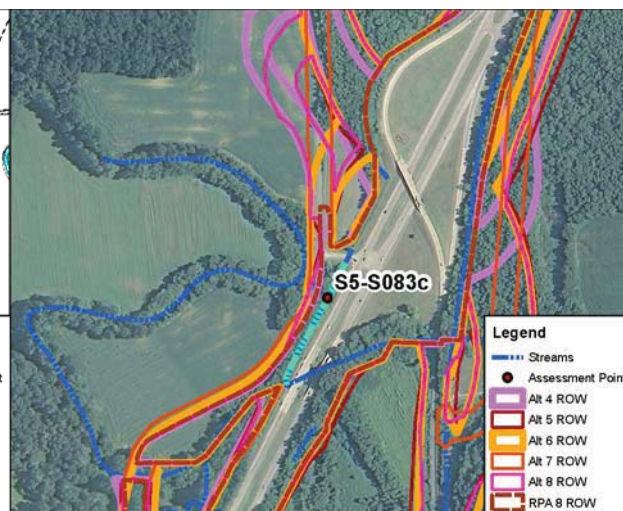
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S083a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S083c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib Beanblossom Ck
Quarter: NE
Range: R1W
Watershed: 05120202010
Channelized/Type: Yes/Roadside Ditch
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 39
Legal Drain (Y/N): N
UTME: 1769859 ft

USGS Quadrangle: Bloomington
Section: 8
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 3.1 feet
OHWM Depth: 1.7 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.01 sq mi
Predominant Sub: Clay

Stream S5-S083c – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	712	0.05	0.80
5	712	0.05	0.85
6	712	0.05	0.83
7	712	0.05	0.87
8	712	0.05	0.83
RPA 8	712	0.05	0.80

Description of Potential Impact:

Impacts to S5-S083c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located within existing INDOT ROW. This ditch flows directly to Beanblossom Creek. There is a narrow riparian corridor associated with this ditch. The floodplain consists of urban roadways adjacent to both banks. Photographs taken upstream and downstream in the area where the Alternatives cross S5-S083c are on the second page of this form.

Stream Impacts S5-S083c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

39

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S083c** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.23234** LONG. RIVER CODE RIVER MILE

DATE **05/12/06** SCORER **J Meeker** COMMENTS **(Long: -86.54287) (Roadside Ditch-Modified Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="4%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="80%"/>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="1%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **5**

HHEI Metric Points

Substrate Max = 40

14

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **ditch is a long pool**MAXIMUM POOL DEPTH (centimeters): **45**

Pool Depth Max = 30

20

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS **OHW - 3.1' / 1.7'**AVERAGE BANKFULL WIDTH (meters): **0.94**

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

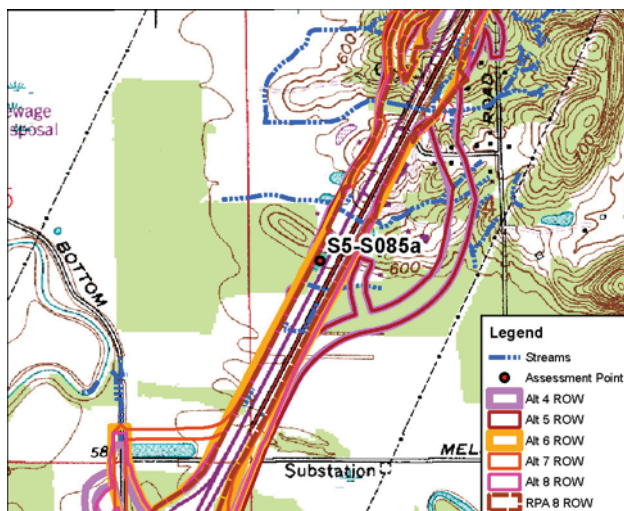
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S083c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S085a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.1 feet
Channelized/Type:	Yes/Concrete Gutter	OHWM Depth:	0.2 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	No
Evaluation Type:	HHEI	IDEM Jurisdiction:	No
Evaluation Score:	12	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Artificial
UTME: 1771882 ft	UTMN: 14241363 ft		

Stream S5-S085a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	202	0.01	0.09
5	202	0.01	0.11
6	202	0.01	0.11
7	202	0.01	0.00
8	202	0.01	0.00
RPA 8	202	0.01	0.00

Description of Potential Impact:

Impacts to S5-S085a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter. There is no riparian corridor associated with this artificial drainageway. This ditch flows into an emergent wetland. The adjacent floodplain consists of maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S085a are on the second page of this form.

Stream Impacts S5-S085a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S085a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.24280 LONG. RIVER CODE RIVER MILE

DATE 04/25/12 SCORER KSS/DEW COMMENTS (Long: -86.53565) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.1'/0.2' AVERAGE BANKFULL WIDTH (meters): 0.33

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

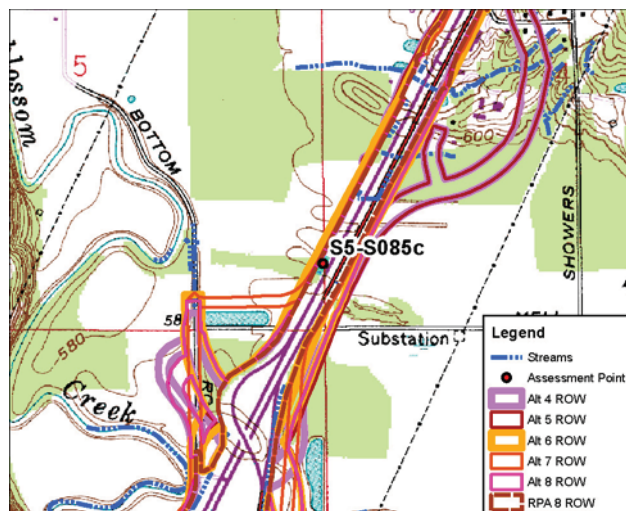
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

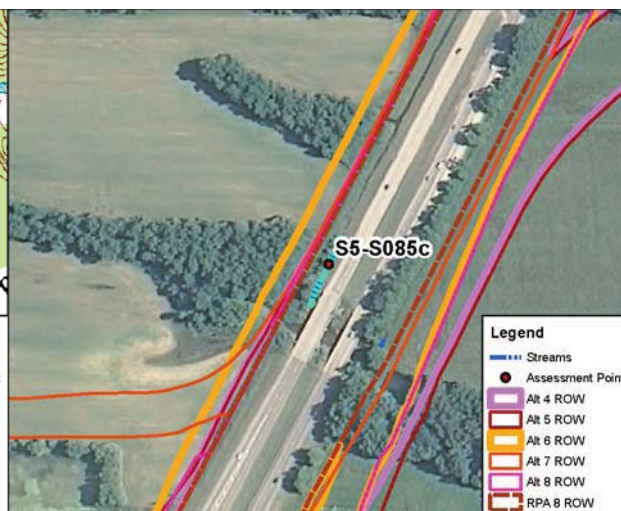
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S085a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S085c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	5
Quarter:	SE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	4.6 feet
Channelized/Type:	Yes/Roadside Ditch	OHWM Depth:	0.5 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	26	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Muck/leaf pack
UTME: 1771147 ft	UTMN: 14249966 ft		

Stream S5-S085c – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	203	0.02	0.00
5	203	0.02	0.00
6	203	0.02	0.12
7	203	0.02	0.01
8	203	0.02	0.00
RPA 8	203	0.02	0.00

Description of Potential Impact:

Impacts to S5-S085c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a roadside ditch with a muck, clay, and silt bottom. There is a narrow riparian corridor associated with this man-made drainageway. This ditch flows into an emergent wetland. The adjacent floodplain consists of maintained INDOT ROW on the left side and shrub rangeland on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S085c are on the second page of this form.

Stream Impacts S5-S085c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

26

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S085c** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.23898** LONG. RIVER CODE RIVER MILE

DATE **04/24/12** SCORER **KSS** COMMENTS **(Long: -86.53827) *(Roadside Ditch-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="25%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="35%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> MUCK [0 pts]	<input type="text" value="40%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

6

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): **5**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS **OHW = 4.6'/0.5'** AVERAGE BANKFULL WIDTH (meters): **1.40**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Beanblossom Creek	Distance from Evaluated Stream	0.30
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/19/12** Quantity: **0.20**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **95%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

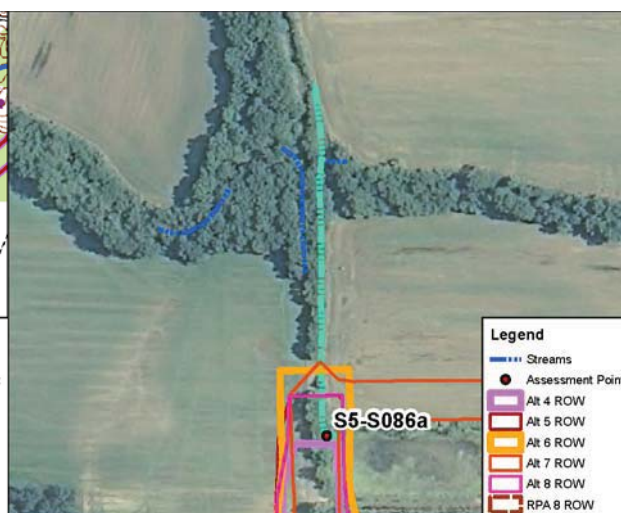
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S085c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S086a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	5
Quarter:	SE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.9 feet
Channelized/Type:	Yes/Roadside Ditch	OHWM Depth:	0.1 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	34	Watershed Area:	0.02 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Clay/gravel
UTME: 1769827 ft	UTMN: 14249472 ft		

Stream S5-S086a – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	0	0.00	0.00
5	142	0.01	0.00
6	210	0.01	0.00
7	228	0.01	0.00
8	142	0.01	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S086a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located east and parallel to Bottom Road. This nearly flat ditch flows between wetland systems. There is no riparian buffer associated with the left bank (Bottom Road). The right bank floodplain consists of an old field. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S086a are on the second page of this form.

Stream Impacts S5-S086a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

34

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S086a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 200

LAT. 39.23764

LONG.

RIVER CODE

RIVER MILE

DATE 05/12/06

SCORER A Rogers

COMMENTS (Long: -86.54295) (Roadside Ditch-Modified Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL
MODIFICATIONS:☐ NONE / NATURAL CHANNEL☐ RECOVERED☒ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	60%
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	20%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	5%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of
Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage
Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI
Metric
PointsSubstrate
Max = 40

14

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 7

Pool Depth
Max = 30

15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW - 1.9' / 0.1'

AVERAGE BANKFULL WIDTH (meters): 0.70

Bankfull
Width
Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **65%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

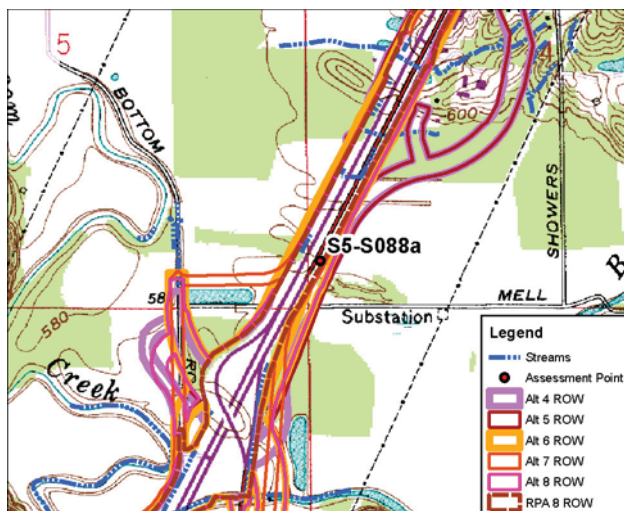
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

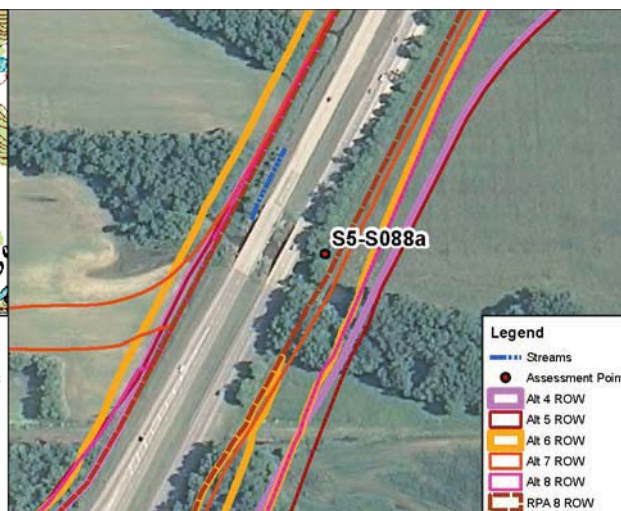
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S086a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S088a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SE	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.9 feet
Channelized/Type:	Yes/Roadside Ditch	OHWM Depth:	0.4 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	19	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Clay/silt
UTME: 1761288 ft	UTMN: 14249764 ft		

Stream S5-S088a – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	20	0.01	0.09
5	20	0.01	0.09
6	20	0.01	0.09
7	20	0.01	0.09
8	20	0.01	0.09
RPA 8	20	0.01	0.07

Description of Potential Impact:

Impacts to S5-S088a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located east of and parallel to Bottom Road. This nearly flat ditch flows between wetland systems. There is no riparian buffer associated with the right bank (SR 37). The left bank has a moderately wide riparian buffer and a cropland in the adjacent floodplain. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S088a are on the second page of this form.

Stream Impacts S5-S088a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

19

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S088a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 20 LAT. 39.23842 LONG. RIVER CODE RIVER MILE

DATE 05/12/06 SCORER A Rogers COMMENTS (Long: -86.53778) (Roadside Ditch-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	30%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	10%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	5%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	40%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	10%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 5.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 6

HHEI Metric Points

Substrate Max = 40

9

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 4

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 1.9' / 0.4' AVERAGE BANKFULL WIDTH (meters): 0.70

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input checked="" type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/12/06** Quantity: **0.39**

Photograph Information: **5807 Upstream / 5805 Downstream**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **90%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

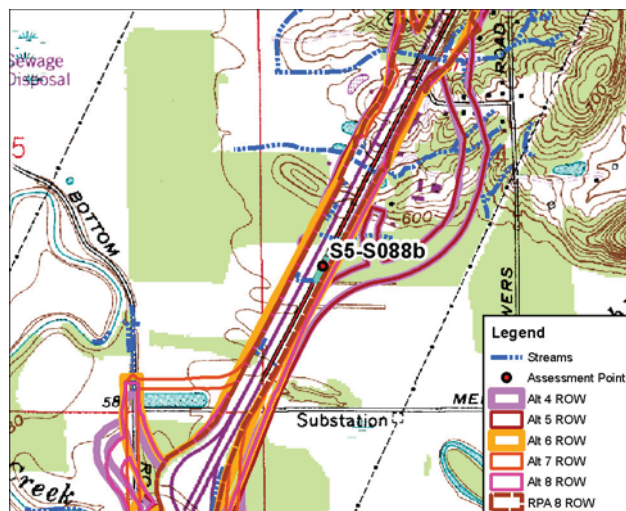
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

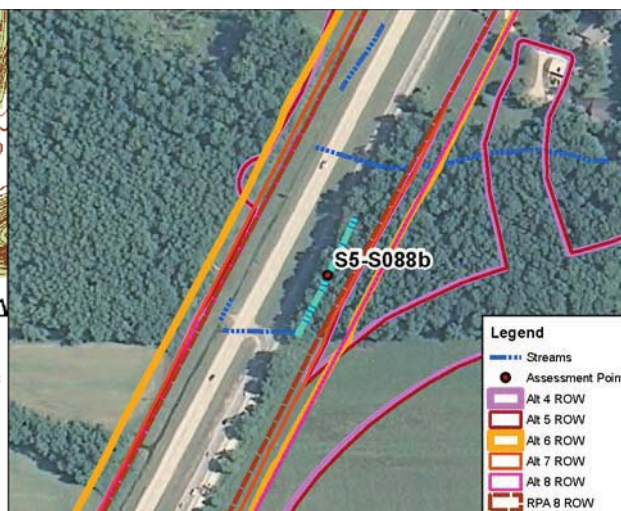
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S088a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S088b



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	5.0 feet
Channelized/Type:	Yes/Roadside Ditch	OHWM Depth:	0.5 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	31	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Muck/silt
UTME: 1771885 ft	UTMN: 14250786 ft		

Stream S5-S088b – Modified Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	345	0.04	0.54
5	345	0.04	0.55
6	345	0.04	0.78
7	345	0.04	0.54
8	345	0.04	0.78
RPA 8	345	0.04	0.47

Description of Potential Impact:

Impacts to S5-S088b for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The roadside ditch is located adjacent to SR 37. Substrate primarily consists of muck and silt. There is no riparian buffer associated with the right bank (SR 37). The wide left side riparian corridor and associated floodplain consists of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S088b are on the second page of this form.

Stream Impacts S5-S088b



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

31

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S088b**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.24122**

LONG.

RIVER CODE

RIVER MILE

DATE **04/24/12**

SCORER **KSS**

COMMENTS **(Long: -86.53601) (Roadside Ditch-Modified Class II)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="16%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="14%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> MUCK [0 pts]	<input type="text" value="70%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%		Substrate Percentage Check 100%	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**

TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

6

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check ONLY one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): **3**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20

COMMENTS **OHW = 5'/0.5'** AVERAGE BANKFULL WIDTH (meters): **1.52**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check ONLY one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check ONLY one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text" value="0.57"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

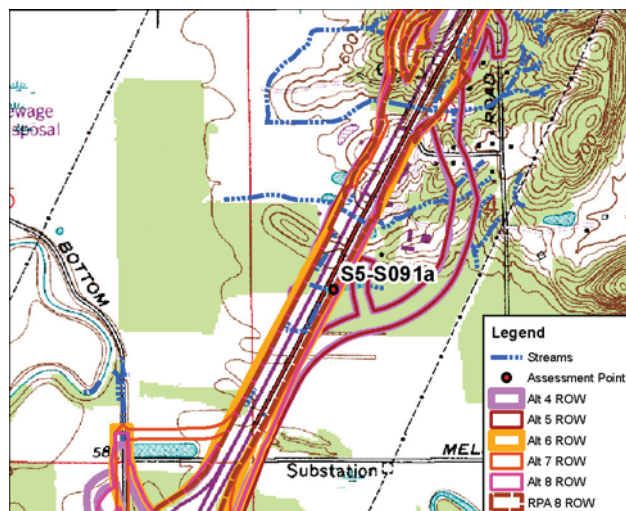
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

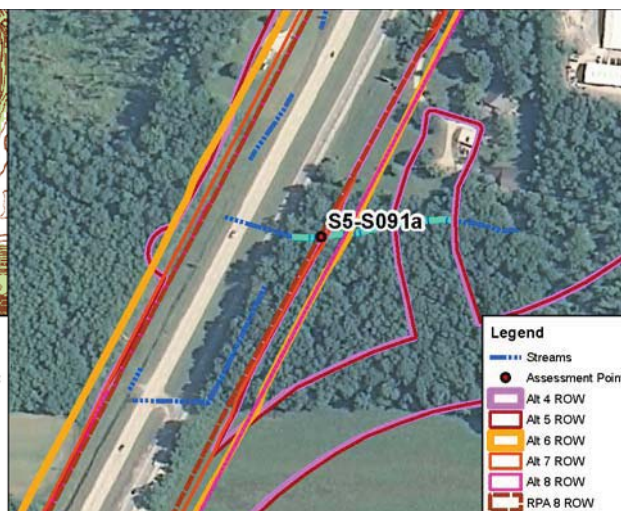
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S088b for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S091a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	3.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	1.0 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	35	Watershed Area:	0.02 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Silt/Leafpack
UTME: 1772004 ft	UTMN: 14251068 ft		

Stream S5-S091a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	245	0.02	1.00
5	247	0.02	1.00
6	148	0.01	0.64
7	90	0.01	0.36
8	140	0.01	0.61
RPA 8	73	0.01	0.31

Description of Potential Impact:

Impacts to S5-S091a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately silt and leafpack. There is a moderate riparian buffer associated with this stream. The floodplain consists of mature forests on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S091a are on the second page of this form.

Stream Impacts S5-S091a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

35

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S091a

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.02

LENGTH OF STREAM REACH (ft) 435

LAT. 39.24205

LONG.

RIVER CODE

RIVER MILE

DATE 02/19/13

SCORER DEW

COMMENTS (Long: -86.53473) (Natural - Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	40%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	30%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	10%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	20%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%
Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00% (A)		Substrate Percentage Check 100% (B)	

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

10

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input checked="" type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 30

Pool Depth Max = 30

20

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 3.0'/1.0'

AVERAGE BANKFULL WIDTH (meters): 0.91

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text" value="0.57"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

Comments Regarding Biology:

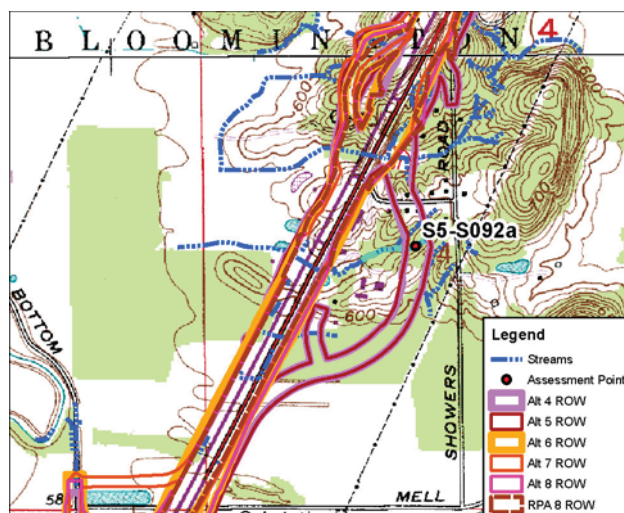
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

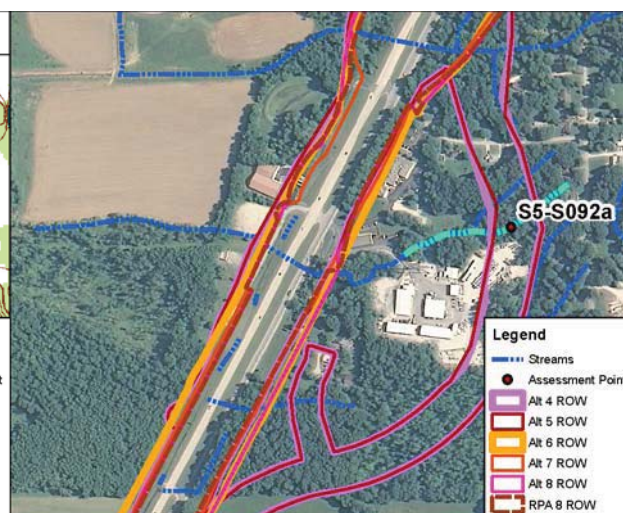
See Stream Assessment Form
S5-S091a for site topographic map,
aerial photograph, and resource photographs

FLOW 

Stream Impacts S5-S092a



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	2.4 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.7 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	28	Watershed Area:	0.04 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Clay/fine detritus
UTME: 1773339 ft	UTMN: 14252011 ft		

Stream S5-S092a – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	273	0.02	1.13
5	263	0.01	1.09
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S092a for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately clay and fine detritus. There is a wide riparian buffer associated with this stream where Alternatives 4 and 5 cross this stream. The floodplain consists of mature forests on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S092a are on the second page of this form.

Stream Impacts S5-S092a



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

28

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S092a** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.04**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.24456** LONG. RIVER CODE RIVER MILE

DATE **05/11/06** SCORER **J Meeker** COMMENTS **(Long: -86.53049) (Natural-Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="10%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="20%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="60%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="5%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **3**TOTAL NUMBER OF SUBSTRATE TYPES: **5**

HHEI Metric Points

Substrate Max = 40

8

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15

COMMENTS MAXIMUM POOL DEPTH (centimeters): **7**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 2.4' / 0.7'** AVERAGE BANKFULL WIDTH (meters): **0.75**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order **2**

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/11/06** Quantity: **0.60**

Photograph Information: **87 Upstream / 88 Downstream / 89 Right Bank / 90 Left Bank**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **45%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

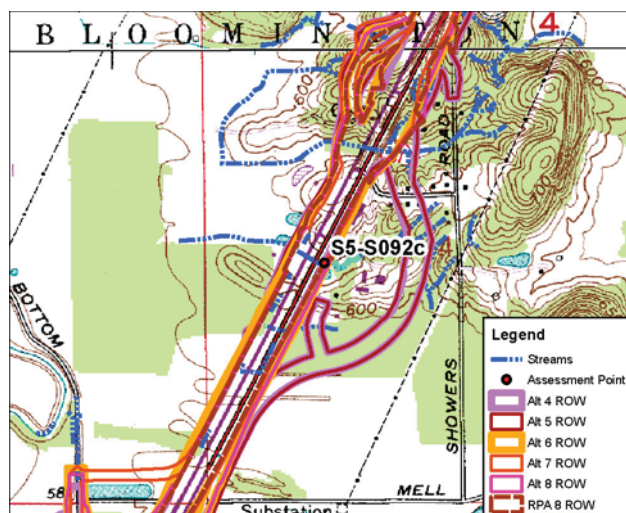
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

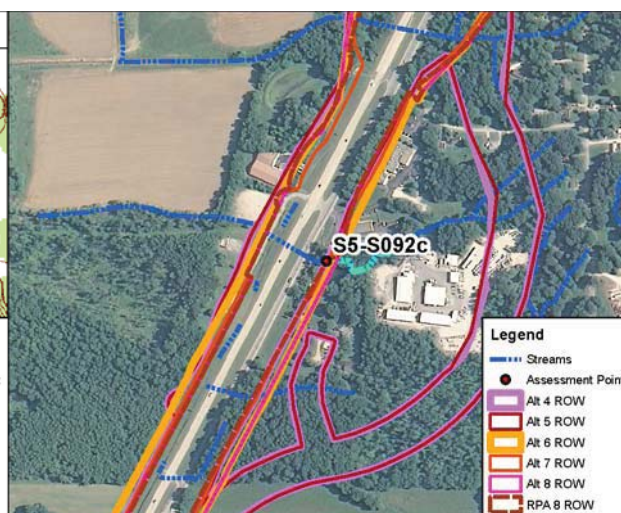
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S092a for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S092c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	4.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.6 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	43	Watershed Area:	0.04 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Silt/sand
UTME: 1772307 ft	UTMN: 14251772 ft		

Stream S5-S092c – Class II PWHH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	16	0.01	0.06
5	17	0.01	0.06
6	56	0.01	0.16
7	17	0.01	0.06
8	69	0.01	0.16
RPA 8	17	0.01	0.12

Description of Potential Impact:

Impacts to S5-S092c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately silt and sand. There is a wide riparian buffer associated with this stream's right bank and a moderately wide buffer associated with the left bank where Alternatives 4 and 5 cross this stream. The floodplain consists of mature forests on the right and a pond on the left. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S092c are on the second page of this form.

Stream Impacts S5-S092c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

43

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S092c

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 200 LAT. 39.24391 LONG. RIVER CODE RIVER MILE

DATE 10/17/11 SCORER DEW/KSS COMMENTS (Long: -86.53389) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	60%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	30%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): 9

Pool Depth Max = 30

15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 4'/0.6' AVERAGE BANKFULL WIDTH (meters): 1.22

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

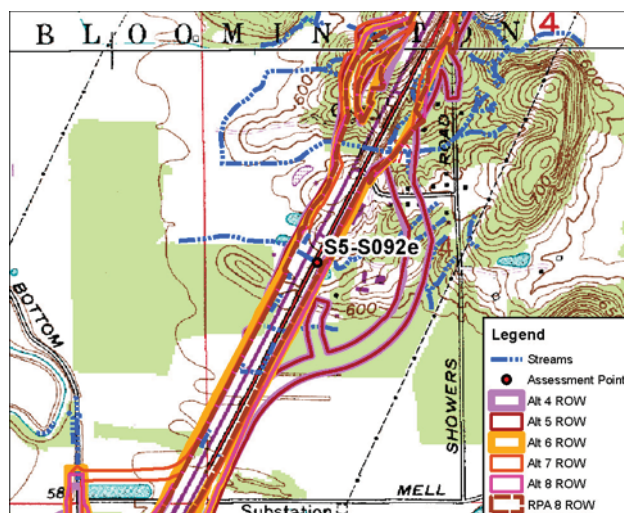
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

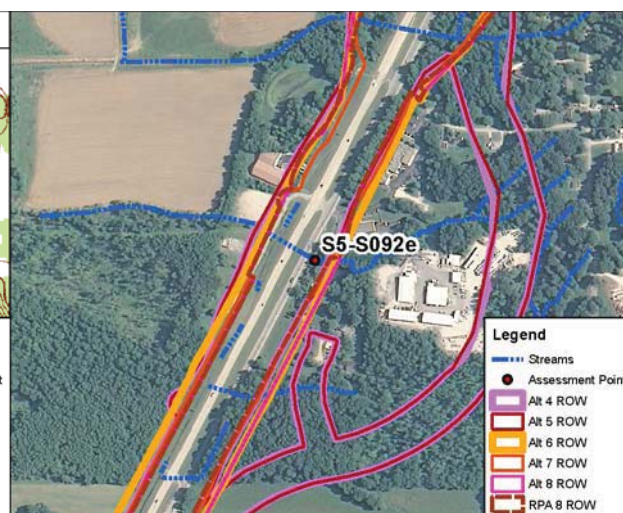
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S092c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S092e



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource: Stream
Stream Name: Unnamed Trib Beanblossom Ck
Quarter: SW
Range: R1W
Watershed: 05120202010
Channelized/Type: No/Natural
Stream Type: Ephemeral
Evaluation Type: HHEI
Evaluation Score: 53
Legal Drain (Y/N): N
UTME: 1772307 ft

USGS Quadrangle: Bloomington
Section: 4
Township: T9N
IDEM 303(d) List: N/A
OHWM Width: 4.0 feet
OHWM Depth: 0.6 feet
USCOE Jurisdiction: Yes
IDEM Jurisdiction: Yes
Watershed Area: 0.04 sq mi
Predominant Sub: Silt/sand

Stream S5-S092e – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	15	0.01	0.00
5	15	0.01	0.00
6	15	0.01	0.00
7	15	0.01	0.00
8	15	0.01	0.00
RPA 8	15	0.01	0.00

Description of Potential Impact:

Impacts to S5-S092e for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate is predominately silt and sand. There is a narrow riparian buffer associated with this stream. The floodplain is in transportation use. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S092e are on the second page of this form.

Stream Impacts S5-S092e



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

53

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S092e

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 15

LAT. 39.24392

LONG.

RIVER CODE

RIVER MILE

DATE 10/17/11

SCORER DEW/KSS

COMMENTS (Long: -86.53414) (Natural-Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	60%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	30%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 4

HHEI Metric Points

Substrate Max = 40

13

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25

COMMENTS MAXIMUM POOL DEPTH (centimeters): 15

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW 4.0'/0.6' AVERAGE BANKFULL WIDTH (meters): 1.22

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

FLOODPLAIN QUALITY

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: Beanblossom Creek Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Bloomington NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Monroe Township / City: Bloomington

MISCELLANEOUS

Base Flow Conditions? (Y/N): Y Date of last precipitation: Quantity: 0.00

Photograph Information:

Elevated Turbidity? (Y/N): N Canopy (% open): 65%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)


Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

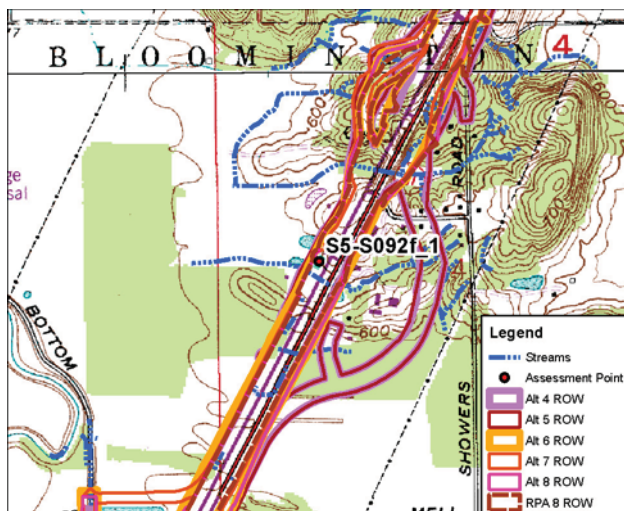
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

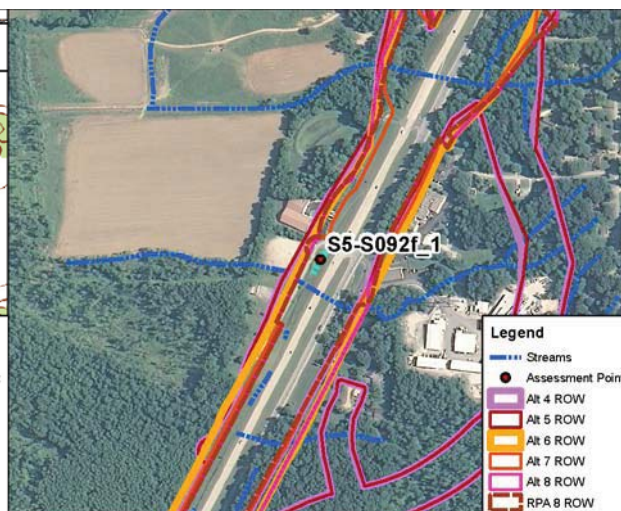
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW  See Stream Assessment Form
S5-S092e for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S092f_1



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.0 feet
Channelized/Type:	Yes/Concrete Gutter	OHWM Depth:	0.15 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	No
Evaluation Type:	HHEI	IDEM Jurisdiction:	No
Evaluation Score:	12	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Artificial
UTME: 1772189 ft	UTMN: 14252020 ft		

Stream S5-S092f_1 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	137	0.01	0.00
5	137	0.01	0.00
6	137	0.01	0.00
7	137	0.01	0.00
8	137	0.01	0.00
RPA 8	137	0.01	0.00

Description of Potential Impact:

Impacts to S5-S092f_1 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter situated in between SR 37 and an unnamed frontage road. This channel flows into a wetland. There is no riparian buffer associated with this artificial channel. The floodplain consists of the maintained INDOT ROW. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S092f_1 are on the second page of this form.

Stream Impacts S5-S092f_1



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S092f_1** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **135** LAT. **39.24461** LONG. RIVER CODE RIVER MILE

DATE **04/25/12** SCORER **KSS/DEW** COMMENTS **(Long: -86.53456) (Concrete Gutter-Modified Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="100%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **6**TOTAL NUMBER OF SUBSTRATE TYPES: **1**

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW 1.0'/0.2'** AVERAGE BANKFULL WIDTH (meters): **0.30**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name: Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name: <input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/24/12** Quantity: **0.15**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

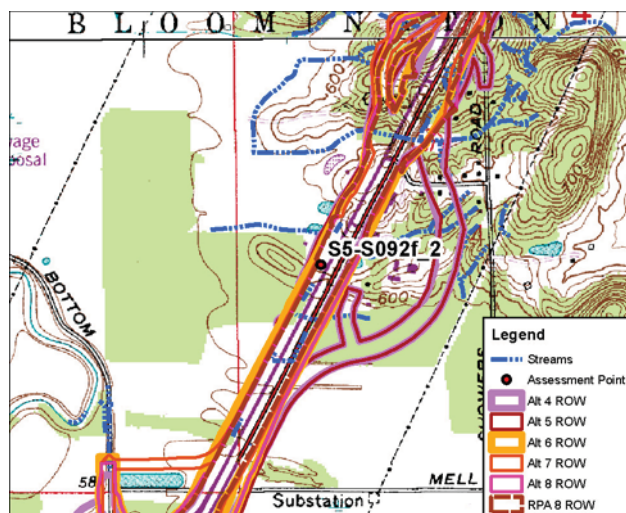
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S092f_1 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S092f_2



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	SW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.0 feet
Channelized/Type:	Yes/Concrete Gutter	OHWM Depth:	0.2 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	No
Evaluation Type:	HHEI	IDEM Jurisdiction:	No
Evaluation Score:	12	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Artificial
UTME: 1772011 ft	UTMN: 14251635 ft		

Stream S5-S092f_2 – Modified Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	57	0.01	0.00
5	57	0.01	0.00
6	57	0.01	0.00
7	57	0.01	0.00
8	57	0.01	0.00
RPA 8	57	0.01	0.00

Description of Potential Impact:

Impacts to S5-S092f_2 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists of a concrete gutter situated in between SR 37 and an unnamed frontage road. This channel flows into a wetland. There is no riparian buffer associated with this artificial channel. The floodplain consists of the maintained INDOT ROW. Photographs taken upstream in the area where these Alternatives cross S5-S092f_2 are on the second page of this form.



Photograph Taken Upstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

12

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S092f_2

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 55

LAT. 39.24355

LONG.

RIVER CODE

RIVER MILE

DATE 04/25/12

SCORER KSS/DEW

COMMENTS (Long: -86.53519) (Concrete Gutter-Modified Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL☐ RECOVERED☐ RECOVERING☒ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	0%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	0%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input checked="" type="checkbox"/> ARTIFICIAL [3 pts]	100%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6

TOTAL NUMBER OF SUBSTRATE TYPES: 1

HHEI Metric Points

Substrate Max = 40

7

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters): 0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW 1.0'/0.2'

AVERAGE BANKFULL WIDTH (meters): 0.30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **04/25/12** Quantity: **0.15**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **100%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

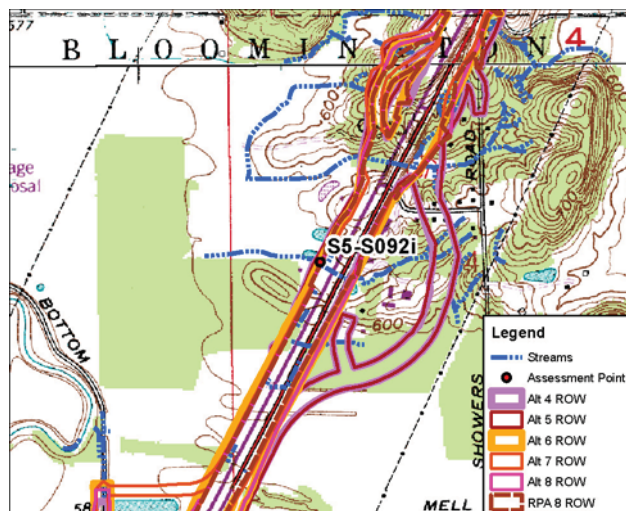
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S092f_2 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S092i



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	4.5 feet
Channelized/Type:	No/Natural	OHWM Depth:	1.3 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	26	Watershed Area:	0.04 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Leaf pack/muck
UTME: 1772063 ft	UTMN: 14251937 ft		

Stream S5-S092i – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	40	0.01	0.00
5	40	0.01	0.00
6	35	0.01	0.00
7	2	0.01	0.00
8	2	0.01	0.00
RPA 8	2	0.01	0.00

Description of Potential Impact:

Impacts to S5-S092i for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. This is a 40-foot long day-lighted portion of stream situated in between culverts. The substrate is predominately muck and leaf pack. There is a narrow riparian buffer associated with this short stream segment. The floodplain consists of the new field on the left bank and a newly graded area on the right. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S092i are on the second page of this form.

Stream Impacts S5-S092i



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

26

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S092i

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.04

LENGTH OF STREAM REACH (ft) 40

LAT. 39.24438

LONG.

RIVER CODE

RIVER MILE

DATE 04/24/12

SCORER KSS

COMMENTS (Long: -86.53500) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	60%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	0%	<input checked="" type="checkbox"/> MUCK [0 pts]	30%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3

TOTAL NUMBER OF SUBSTRATE TYPES: 3

HHEI Metric Points

Substrate Max = 40

6

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS MAXIMUM POOL DEPTH (centimeters): 4

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS OHW = 4.5'/1.3' AVERAGE BANKFULL WIDTH (meters): 1.40

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	<input type="text" value="Beanblossom Creek"/>	Distance from Evaluated Stream	<input type="text" value="0.57"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: NRCS Soil Map Page: NRCS Soil Map Stream Order

County: Township / City:

MISCELLANEOUS

Base Flow Conditions? (Y/N): Date of last precipitation: Quantity:

Photograph Information:

Elevated Turbidity? (Y/N): Canopy (% open):

Were samples collected for water chemistry? (Y/N): (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) Voucher? (Y/N) Salamanders Observed? (Y/N) Voucher? (Y/N)

Frogs or Tadpoles Observed? (Y/N) Voucher? (Y/N) Aquatic Macroinvertebrates Observed? (Y/N) Voucher? (Y/N)

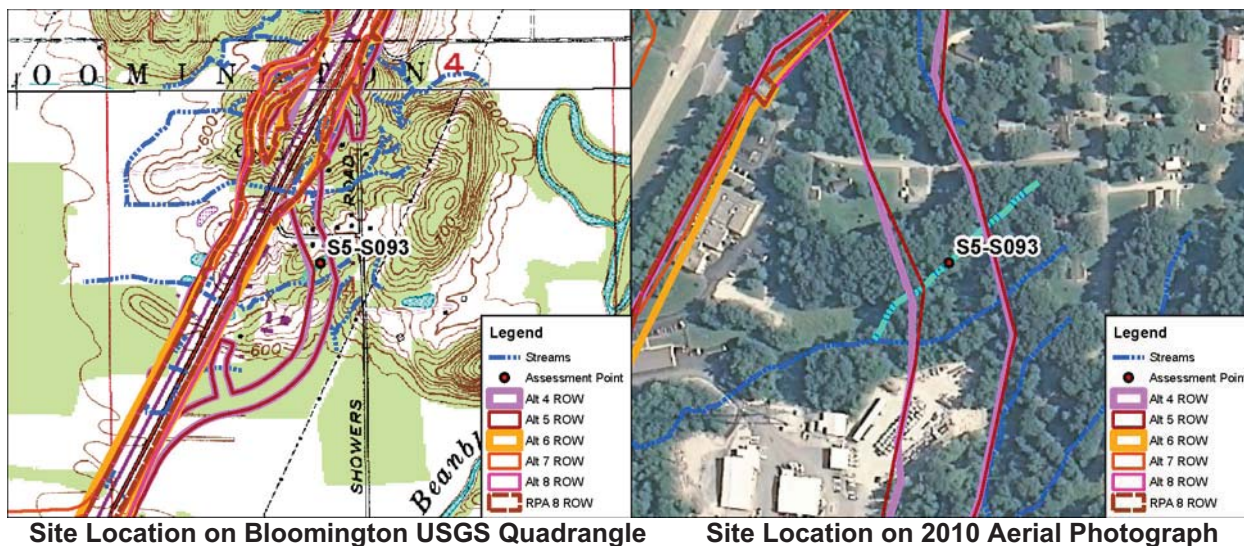
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S092i for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S093



Site Location on Bloomington USGS Quadrangle

Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	2.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	1.3 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	42	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Clay/bedrock
UTME: 1773330 ft	UTMN: 14252193 ft		

Stream S5-S093 – Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	265	0.01	0.84
5	228	0.01	0.75
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S093 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of clay, bedrock, and gravel. There is a wide riparian corridor on both banks of the stream where Alternatives 4 and 5 cross this stream. The floodplain consists primarily of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S093 are on the second page of this form.

Stream Impacts S5-S093



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

42

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S093

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.24506 LONG. RIVER CODE RIVER MILE

DATE 05/11/06 SCORER A Rogers COMMENTS (Long: -86.53053) (Natural Class II)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input type="checkbox"/> SILT [3 pt]	5%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	10%
<input checked="" type="checkbox"/> BEDROCK [16 pt]	20%	<input type="checkbox"/> FINE DETRITUS [3 pts]	0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	10%	<input checked="" type="checkbox"/> CLAY or HARDPAN [0 pt]	40%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	15%	<input type="checkbox"/> MUCK [0 pts]	0%
<input type="checkbox"/> SAND (<2 mm) [6 pts]	0%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 30.00%

(A)

Substrate Percentage Check 100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 16

TOTAL NUMBER OF SUBSTRATE TYPES: 6

HHEI Metric Points

Substrate Max = 40

22

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15

COMMENTS MAXIMUM POOL DEPTH (centimeters): 6

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS OHW - 2.1' / 0.1' AVERAGE BANKFULL WIDTH (meters): 0.80

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/11/06** Quantity: **0.60**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **25%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

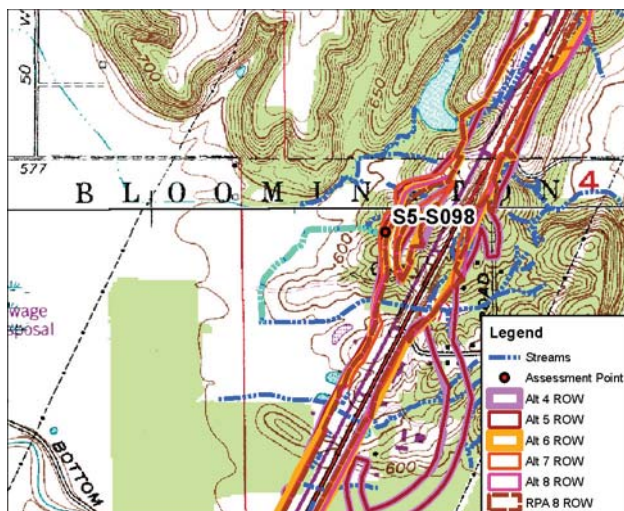
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

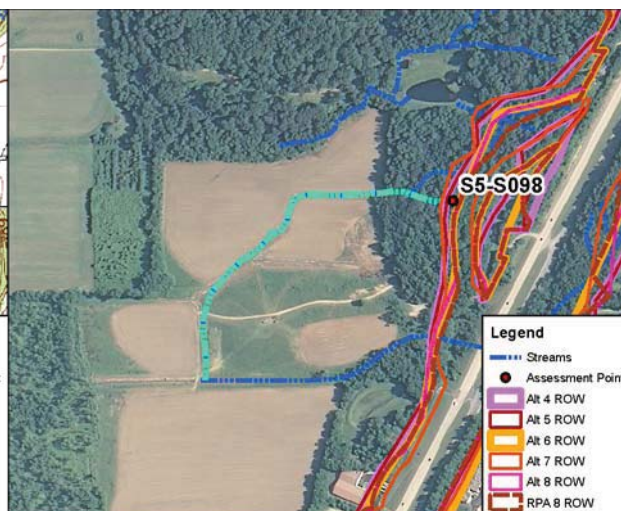
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S093 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S098



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.1 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.5 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	35	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Leaf pack/bedrock
UTME: 1772603 ft	UTMN: 14253738 ft		

Stream S5-S098 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	76	0.01	0.67
5	74	0.01	0.66
6	0	0.00	0.37
7	100	0.01	0.74
8	1	0.01	0.37
RPA 8	0	0.00	0.34

Description of Potential Impact:

Impacts to S5-S098 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists of bedrock, gravel, and leaf pack. There is a wide riparian corridor on both banks of the stream where the Alternatives cross this stream. The floodplain consists primarily of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S098 are on the second page of this form.

Stream Impacts S5-S098



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

35

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S098**

RIVER BASIN **White River**

DRAINAGE AREA (mi²) **0.01**

LENGTH OF STREAM REACH (ft) **200**

LAT. **39.24932**

LONG.

RIVER CODE

RIVER MILE

DATE **05/11/06**

SCORER **A Rogers**

COMMENTS **(Long: -86.53306) (Natural Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☒ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="45%"/>
<input checked="" type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="20%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="10%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **30.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **19**

TOTAL NUMBER OF SUBSTRATE TYPES: **6**

HHEI Metric Points

Substrate Max = 40

25

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input checked="" type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

5

COMMENTS **Minimal pools**

MAXIMUM POOL DEPTH (centimeters): **5**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5

COMMENTS **OHW - 1.1' / 0.5'**

AVERAGE BANKFULL WIDTH (meters): **0.80**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☒ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

☒ WWH Name: **Beanblossom Creek** Distance from Evaluated Stream

☐ CWH Name: Distance from Evaluated Stream

☐ EWH Name: Distance from Evaluated Stream

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/11/06** Quantity: **0.60**

Photograph Information: **61 Upstream / 62 Downstream / 63 Right bank / 64 Left bank**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **5%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

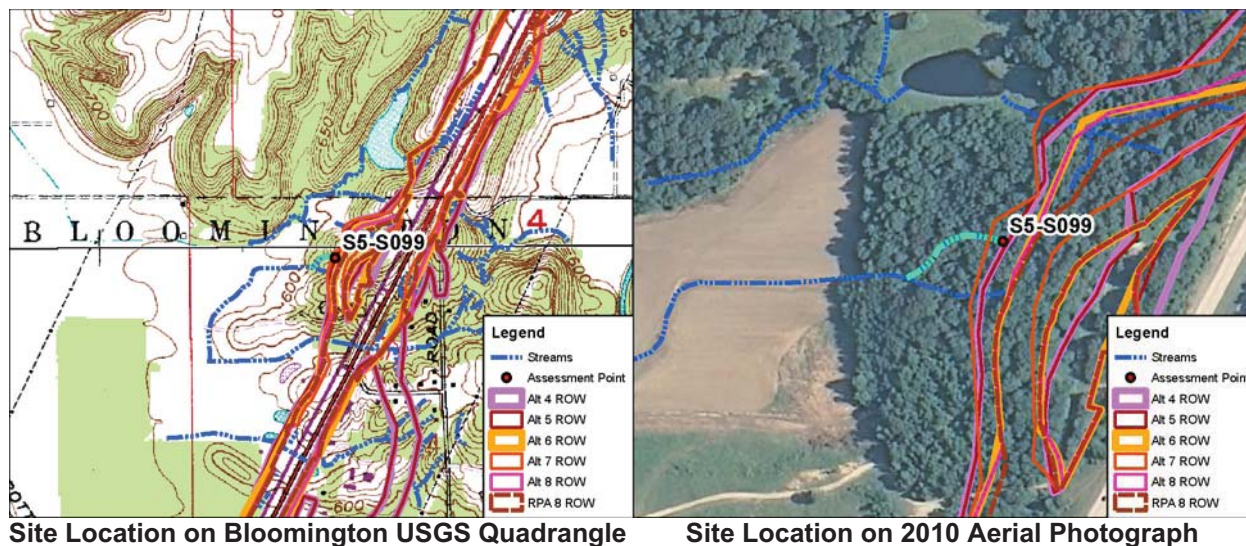
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S098 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S099



Aquatic Resource:

Stream

Stream Name:

Unnamed Trib Beanblossom Ck

Quarter:

NW

Range:

R1W

Watershed:

05120202010

Channelized/Type:

No/Natural

Stream Type:

Ephemeral

Evaluation Type:

HHEI

Evaluation Score:

19

Legal Drain (Y/N):

N

UTME: 1772623 ft

UTMN: 14253876 ft

USGS Quadrangle:

Bloomington

Section:

4

Township:

T9N

IDEM 303(d) List:

N/A

OHWM Width:

3.0 feet

OHWM Depth:

0.3 feet

USCOE Jurisdiction:

Yes

IDEM Jurisdiction:

Yes

Watershed Area:

0.01 sq mi

Predominant Sub:

Silt/sand

Stream S5-S099 – Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	8	0.01	0.21
5	8	0.01	0.22
6	0	0.00	0.10
7	56	0.01	0.37
8	0	0.00	0.09
RPA 8	0	0.00	0.07

Description of Potential Impact:

Impacts to S5-S099 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The substrate consists primarily of silt and sand. There is a wide riparian corridor on both banks of the stream where the Alternatives cross this stream. The floodplain consists primarily of mature forest. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S099 are on the second page of this form.

Stream Impacts S5-S099



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

19

HHEI Score (sum of metrics 1, 2, 3) :

SITE NAME/LOCATION I-69 Section 5

SITE NUMBER S5-S099

RIVER BASIN White River

DRAINAGE AREA (mi²) 0.01

LENGTH OF STREAM REACH (ft) 200 LAT. 39.24970 LONG. RIVER CODE RIVER MILE

DATE 10/17/11 SCORER DEW/KSS COMMENTS (Long: -86.53299) (Natural-Class I)

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS:

☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	0%	<input checked="" type="checkbox"/> SILT [3 pt]	50%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	5%
<input type="checkbox"/> BEDROCK [16 pt]	0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	5%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	0%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5%	<input type="checkbox"/> MUCK [0 pts]	0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	35%	<input type="checkbox"/> ARTIFICIAL [3 pts]	0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0.00%

(A)

Substrate Percentage Check

100%

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 9

TOTAL NUMBER OF SUBSTRATE TYPES: 5

HHEI Metric Points

Substrate Max = 40

14

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters): 0

Pool Depth Max = 30

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

COMMENTS OHW = 3'/0.3' AVERAGE BANKFULL WIDTH (meters): 0.90

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☒ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **0%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

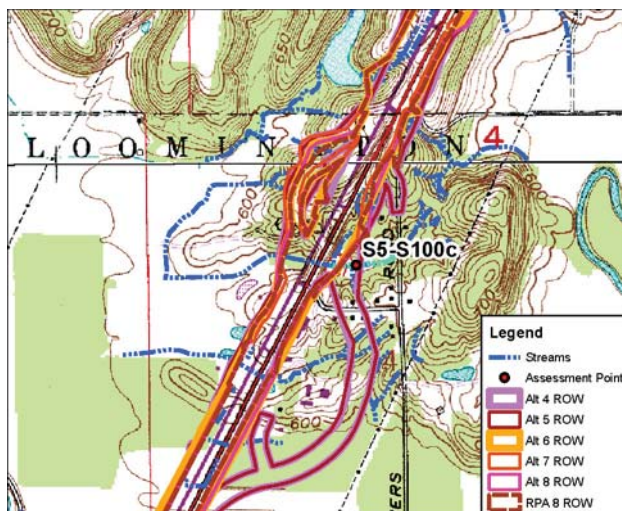
Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

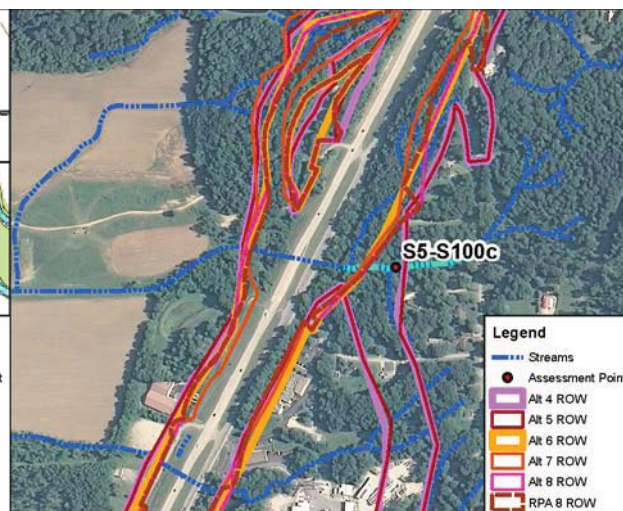
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S099 for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S100c



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	3.5 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.9 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	27	Watershed Area:	0.09 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Sand/silt
UTME: 1773287 ft	UTMN: 14252929 ft		

Stream S5-S100c - Class I PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	321	0.03	1.46
5	323	0.03	1.48
6	107	0.01	0.48
7	89	0.01	0.39
8	124	0.01	0.55
RPA 8	118	0.01	0.53

Description of Potential Impact:

Impacts to S5-S100c for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of sand, silt and leaf pack. There is a wide riparian buffer associated with this stream. The floodplain consists of a sparsely forested area adjacent to both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S100c are on the second page of this form.

Stream Impacts S5-S100c



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) :

27

SITE NAME/LOCATION **I-69 Section 5**

SITE NUMBER **S5-S100c** RIVER BASIN **White River** DRAINAGE AREA (mi²) **0.09**

LENGTH OF STREAM REACH (ft) **200** LAT. **39.24709** LONG. RIVER CODE RIVER MILE

DATE **10/17/11** SCORER **DEW/KSS** COMMENTS **(Long: -86.53066) (Natural Class I)**

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☒ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> SILT [3 pt]	<input type="text" value="30%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="20%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="0%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="0%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="50%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%**

(A)

Substrate Percentage Check **100%**

(B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **9**TOTAL NUMBER OF SUBSTRATE TYPES: **3**

HHEI Metric Points

Substrate Max = 40

12

A + B

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters): **0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input checked="" type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

15

COMMENTS **OHW = 3.5'/.9'** AVERAGE BANKFULL WIDTH (meters): **1.07**

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS **Through maintained residential yards - no bed/bank at many locations**FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input checked="" type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **10/13/11** Quantity: **0.25**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **65%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

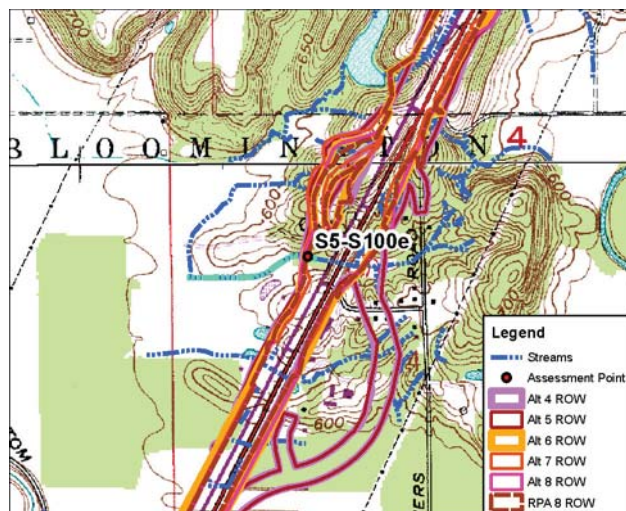
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

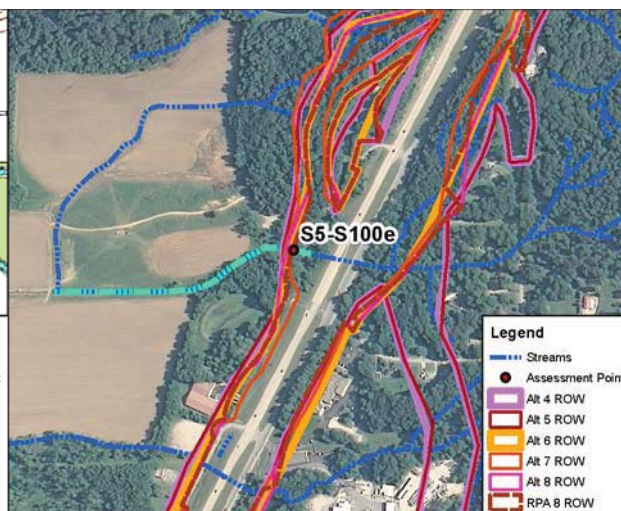
FLOW →

See Stream Assessment Form
S5-S100c for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S100e



Site Location on Bloomington USGS Quadrangle



Site Location on 2010 Aerial Photograph

Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	6.5 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.1 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	64	Watershed Area:	0.09 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Sand/gravel
UTME: 1772543 ft	UTMN: 14253023 ft		

Stream S5-S100e - Class III PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	146	0.02	0.66
5	144	0.02	0.65
6	123	0.02	0.56
7	126	0.02	0.55
8	131	0.02	0.59
RPA 8	97	0.01	0.44

Description of Potential Impact:

Impacts to S5-S100e for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of sand and gravel. There is a wide riparian buffer associated with this stream. The floodplain consists of the immature forest on both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S100e are on the second page of this form.

Stream Impacts S5-S100e



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

64**HHEI Score (sum of metrics 1, 2, 3) :**SITE NAME/LOCATION **I-69 Section 5**SITE NUMBER **S5-S100e**RIVER BASIN **White River**DRAINAGE AREA (mi²) **0.09**LENGTH OF STREAM REACH (ft) **200**LAT. **39.24736**LONG. RIVER CODE RIVER MILE DATE **05/30/12**SCORER **JDP**COMMENTS **(Long: -86.53329) (Natural Class III)****NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions****STREAM CHANNEL MODIFICATIONS:**☐ NONE / NATURAL CHANNEL☒ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> SILT [3 pt]	<input type="checkbox"/> 10%
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/> 0%	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/> 0%
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="checkbox"/> 0%	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="checkbox"/> 10%
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input checked="" type="checkbox"/> 30%	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/> 0%
<input checked="" type="checkbox"/> SAND (<2 mm) [6 pts]	<input checked="" type="checkbox"/> 50%	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/> 0%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **0.00%****(A)**Substrate Percentage Check **100%****(B)**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **4****HHEI Metric Points**

Substrate Max = 40

19**A + B**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input checked="" type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

25COMMENTS MAXIMUM POOL DEPTH (centimeters): **18**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

20COMMENTS **OHW = 6.5'/1.0'** AVERAGE BANKFULL WIDTH (meters): **1.98****This information must also be completed****RIPARIAN ZONE AND FLOODPLAIN QUALITY**

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH**FLOODPLAIN QUALITY**

L	R	(Per Bank)	L	R	(Most Predominant per Bank)	L	R	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m	<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m	<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field	<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	None	<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS **FLOW REGIME** (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): ☒ Y Date of last precipitation: **05/28/12** Quantity: **0.14**

Photograph Information:

Elevated Turbidity? (Y/N): ☒ N Canopy (% open): **25%**

Were samples collected for water chemistry? (Y/N): ☒ N (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) ☒ Y If not, please explain:

Additional comments/description of pollution impacts:

BIOTIC EVALUATION

Performed? (Y/N): ☒ N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Salamanders Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Frogs or Tadpoles Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N Aquatic Macroinvertebrates Observed? (Y/N) ☒ N Voucher? (Y/N) ☒ N

Comments Regarding Biology:

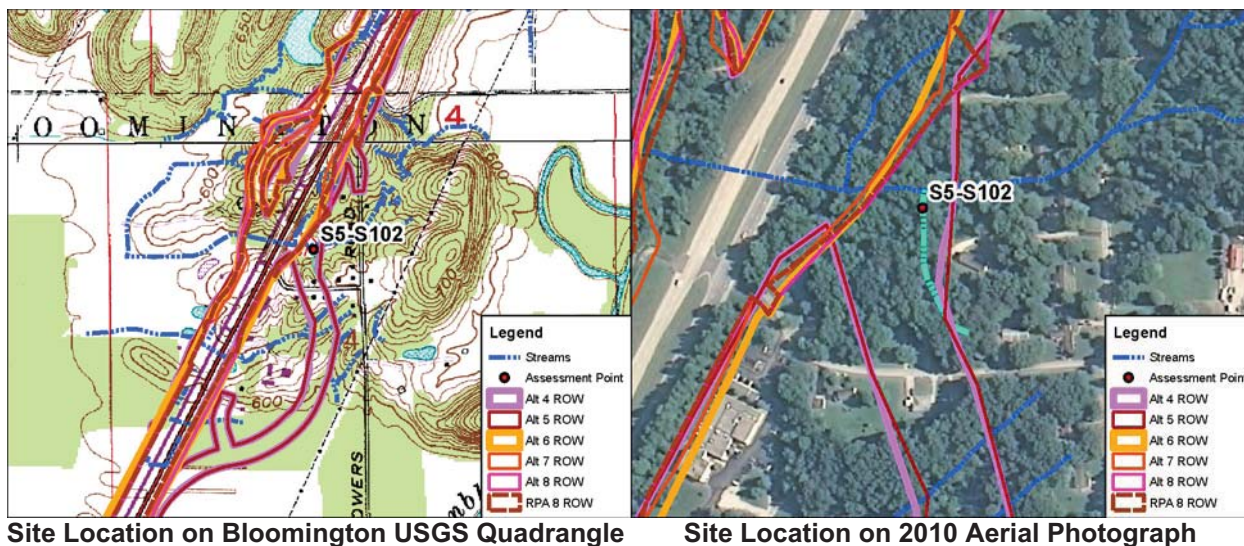
DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →

See Stream Assessment Form
S5-S100e for site topographic map,
aerial photograph, and resource photographs

Stream Impacts S5-S102



Aquatic Resource:	Stream	USGS Quadrangle:	Bloomington
Stream Name:	Unnamed Trib Beanblossom Ck	Section:	4
Quarter:	NW	Township:	T9N
Range:	R1W	IDEM 303(d) List:	N/A
Watershed:	05120202010	OHWM Width:	1.0 feet
Channelized/Type:	No/Natural	OHWM Depth:	0.1 feet
Stream Type:	Ephemeral	USCOE Jurisdiction:	Yes
Evaluation Type:	HHEI	IDEM Jurisdiction:	Yes
Evaluation Score:	41	Watershed Area:	0.01 sq mi
Legal Drain (Y/N):	N	Predominant Sub:	Leaf Pack/cobble
UTME: 1773250 ft	UTMN: 14252878 ft		

Stream S5-S102 - Class II PHWH			
Alternatives	Length of Impact (feet)	Area of Impact (acres)	Riparian Impact (acres)
4	361	0.01	0.87
5	334	0.01	0.93
6	0	0.00	0.00
7	0	0.00	0.00
8	0	0.00	0.00
RPA 8	0	0.00	0.00

Description of Potential Impact:

Impacts to S5-S102 for Alternatives 4, 5, 6, 7, 8 and RPA 8 are listed in the table above. The channel consists predominantly of cobble, gravel, bedrock, and leaf pack. There is a wide riparian buffer associated with this stream. The floodplain consists of a sparsely forested area adjacent to both banks. Photographs taken upstream and downstream in the area where these Alternatives cross S5-S102 are on the second page of this form.

Stream Impacts S5-S102



Photograph Taken Upstream



Photograph Taken Downstream



Primary Headwater Habitat Evaluation Form

41**HHEI Score (sum of metrics 1, 2, 3) :**SITE NAME/LOCATION **I-69 Section 5**SITE NUMBER **S5-S102**RIVER BASIN **White River**DRAINAGE AREA (mi²) **0.01**LENGTH OF STREAM REACH (ft) **200**LAT. **39.24695**LONG. RIVER CODE RIVER MILE DATE **05/11/06**SCORER **A Rogers**COMMENTS **(Long: -86.53080) (Natural-Class II)****NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PWH Streams" for Instructions****STREAM CHANNEL MODIFICATIONS:**☒ NONE / NATURAL CHANNEL☐ RECOVERED☐ RECOVERING☐ RECENT OR NO RECOVERY

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> SILT [3 pt]	<input type="text" value="10%"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="text" value="0%"/>	<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="text" value="40%"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="text" value="10%"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="text" value="0%"/>
<input checked="" type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input type="text" value="20%"/>	<input type="checkbox"/> CLAY or HARDPAN [0 pt]	<input type="text" value="5%"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="text" value="15%"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="text" value="0%"/>
<input type="checkbox"/> SAND (<2 mm) [6 pts]	<input type="text" value="0%"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="text" value="0%"/>

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **30.00%****(A)**Substrate Percentage Check **100%****(B)**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15**TOTAL NUMBER OF SUBSTRATE TYPES: **6****HHEI Metric Points**

Substrate Max = 40

21**A + B**

2. **Maximum Pool Depth** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

<input type="checkbox"/> > 30 centimeters [20 pts]	<input checked="" type="checkbox"/> > 5 cm - 10 cm [15 pts]
<input type="checkbox"/> > 22.5 - 30 cm [30 pts]	<input type="checkbox"/> < 5 cm [5 pts]
<input type="checkbox"/> > 10 - 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth Max = 30

15COMMENTS MAXIMUM POOL DEPTH (centimeters): **6**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

<input type="checkbox"/> > 4.0 meters (> 13') [30 pts]	<input type="checkbox"/> > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
<input type="checkbox"/> > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	<input checked="" type="checkbox"/> ≤ 1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]	

Bankfull Width Max=30

5COMMENTS **OHW - 1' / 0.1'** AVERAGE BANKFULL WIDTH (meters): **0.35****This information must also be completed****RIPARIAN ZONE AND FLOODPLAIN QUALITY**

☆NOTE: River Left (L) and Right (R) as looking downstream ☆

RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Wide >10m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5-10m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5m
<input type="checkbox"/>	<input type="checkbox"/>	None

COMMENTS **FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential, Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

FLOW REGIME (At Time of Evaluation) (Check *ONLY* one box):

<input checked="" type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, isolated pools, no flow (Intermittent)
<input type="checkbox"/> Subsurface flow with isolated pools (Interstitial)	<input type="checkbox"/> Dry channel, no water (Ephemeral)

COMMENTS **SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

STREAM GRADIENT ESTIMATE☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):QHEI PERFORMED? - ☐ Yes ☒ No QHEI Score (If Yes, Attach Completed QHEI Form)**DOWNSTREAM DESIGNATED USE(S)**

<input checked="" type="checkbox"/> WWH Name:	Beanblossom Creek	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> CWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>
<input type="checkbox"/> EWH Name:	<input type="text"/>	Distance from Evaluated Stream	<input type="text"/>

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Bloomington** NRCS Soil Map Page: **18** NRCS Soil Map Stream Order

County: **Monroe** Township / City: **Bloomington**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **N** Date of last precipitation: **05/11/06** Quantity: **0.60**

Photograph Information:

Elevated Turbidity? (Y/N): **N** Canopy (% open): **25%**

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number:

Field Measures: Temp (°C) Dissolved Oxygen (mg/l) pH (S.U.) Conductivity (µmhos/cm)

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain:

Additional comments/description of pollution impacts: **Flows only during storm events.****BIOTIC EVALUATION**

Performed? (Y/N): **N** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Salamanders Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Frogs or Tadpoles Observed? (Y/N) ☐ Voucher? (Y/N) ☐ Aquatic Macroinvertebrates Observed? (Y/N) ☐ Voucher? (Y/N) ☐

Comments Regarding Biology:

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW → See Stream Assessment Form
S5-S102 for site topographic map,
aerial photograph, and resource photographs